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CONFERENCE ABSTRACTS

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Social and administrative pharmacy

Investigating public sector shortages of psychotropic medicines in the Western Cape, South Africa: A qualitative inquiry

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Introduction: Mental health disorders rank third on South Africa's burden of disease list and remain the leading cause of disability-adjusted life years. The paucity of mental health care professionals in the country's public sector, as well as the limited psychosocial interventions, leaves pharmacological therapy as the most employed method of treatment. There, however, have been various reports of shortages of psychotropic medications in South Africa's public health sector, with the resultant stock-outs negatively affecting mental healthcare patients' ongoing management and recovery.

Objectives: This study aims to investigate the challenges contributing to shortages of psychotropic medicines along the public sector medicines supply chain, the knock-on effects of these shortages, and the mitigation strategies that facilities have in place during these shortages. No study in South Africa has investigated the reasons behind psychotropic medicine shortages from a supply chain perspective, nor has it investigated the impact or contingency plans that facilities have in place during these shortages. This study will, therefore, address this knowledge gap and identify areas of improvement that will contribute towards promoting consistent provisioning of psychotropic medicines for the management of mental disorders in South Africa's public health sector.

Methods: Using a qualitative cross-sectional study design, data collection will be conducted using semi-structured interviews with purposively selected key stakeholders across the medicine supply chain. The semi-structured interviews will be audio-recorded, transcribed and analysed using thematic analysis.

A nationwide register-based study on automated dose dispensing for primary care patients

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Introduction: Automated dose dispensing (ADD) is a service that ensures the safe use of medicines, especially in primary care for older adults. In ADD, regularly used medicines are machine-packed in unit doses according to administration times and dispensed by a community pharmacy. The ADD procedure should also include multi-professional collaboration and annual medication reviews. While ADD has the potential to improve the quality of pharmacotherapy, there is a lack of up-to-date and nationwide-level information on ADD users and medicines in ADD. Using nationwide register data on primary care patients, the aim of this study is to evaluate the number of patients using the ADD service and the prevalence of excessive polypharmacy among these patients, as well as to determine the most frequently dispensed medicines in ADD.

Methods: Data on all dispensations recorded in the centralised national Prescription Centre were retrieved for 1.1.2022–31.12.2022. The recorded dose-dispensing distributions were evaluated, and the study population comprised all persons with at least one recorded dose-

dispensing in 2022. Product- and patient-level data were collected for each dispensation. Medicines were categorised according to the Anatomic Therapeutic Chemical (ATC) Classification System. Excessive polypharmacy was defined as ≥ 10 regular medications. Descriptive analyses were conducted using R.

Results: Altogether, 120,021 patients were using ADD in 2022, and 63% of them were women. The age range was six to 108, and the mean age was 81. Of the patients using ADD, 78% were 75 years old or older, covering 16% of the population of the same age. For people aged 90+, the coverage of the population in ADD was 54% for women and 45% for men. The mean number of medications in ADD was 13.4 for women and 12.9 for men, and 65% of all patients had excessive polypharmacy. On the active pharmaceutical ingredient (API) level, there were 353 different dose-dispensed APIs. The most frequently dispensed APIs in ADD were bisoprolol, furosemide, paracetamol, calcium combinations with vitamin D, and pantoprazole.

Conclusions: ADD is an important service provided by community pharmacies, especially for older adults. Excessive polypharmacy is common among ADD users. Pharmacists, together with other healthcare professionals, should actively work on identifying potentially inappropriate and unnecessary medicine use.

Adverse drug reactions associated with doxorubicin and epirubicin: A descriptive analysis from VigiBase

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Introduction: Cancer is one of the leading causes of death globally. Owing to high toxicity, patients using chemotherapy drugs have a higher risk of developing adverse drug reactions (ADRs). Pharmacovigilance studies are essential in oncology to evaluate ADRs caused by anticancer drugs and improve patient safety.

Objective: This study aimed to analyse serious ADRs associated with the use of doxorubicin and epirubicin reported to VigiBase.

Method: All anonymised data on suspected ADRs for doxorubicin and epirubicin as 'serious' and 'suspected' or 'interacting' drugs between 1968 and 30th August 2021 were extracted from VigiBase. Descriptive statistics were conducted in Microsoft Excel, and data were summarised using frequencies and percentages.

Results: A total of 35,620 serious individual case safety reports were analysed. The majority of reports were from females (Dox = 61.41%; Epi = 86.56%), while the predominant age group was 45–64 years (Dox = 42.06%; Epi = 57.39%). Physicians were the more likely group to report serious ADRs (Dox = 50.03%; Epi = 34.11%). In general, Europe reported the highest for doxorubicin (38.08%), while Asia recorded the highest reports for epirubicin (53.28%). Oceania reported the least for both drugs (Dox = 0.45%; Epi = 0.04%), followed by Africa (Dox = 0.72%; Epi = 0.29%). Blood and lymphatic system disorders were the most reported serious category (Dox = 11053 [44.47%]; Epi = 6659 [61.84%]). The most common manifestations were febrile neutropenia (Dox = 10.52%) and bone marrow failure (Epi = 23.89%).

Conclusion: This study provides relevant global insights into serious ADRs for doxorubicin and epirubicin. This knowledge may assist in minimising and proactively managing ADRs. It can also inform policies to improve patients' quality of life.

Optimisation of antidote emergency preparedness: A risk-based approach

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Introduction: Antidotes are products in acute poisonings in life threatening situations which are globally recorded for suboptimal availability. Antidote availability needs to be balanced against rationale economic funding within a pharmaceutical budget. Within this context, there is an element of risk identification and mitigation within an antidote emergency preparedness programme. Small nations, especially islands, tend to face additional risks due to difficulties associated with logistics and size.

Objective: To perform a risk assessment of antidote availability and accessibility in Malta and provide guidelines and recommendations for optimisation of antidote emergency preparedness.

Method: Phase 1: Data was collected on antidote availability and accessibility through (i) vertical audits of eight antidotes (Pralidoxime, Atropine Sulphate, Hydroxocobalamin kit, Sodium Thiosulphate, Sodium Nitrite, Digoxin Immune Fab, Activated Charcoal and, Acetylcysteine) at the central pharmaceutical procurement unit of the national health service and two acute general hospitals, (ii) onsite-observations and (iii) meeting with experts in the field. Thematic analysis of all data collected was performed for risk identification. Phase 2: A focus group was established for the validation of identified risks. Validated risks were inputted into a colour-coded qualitative risk matrix developed for each antidote for risk theme prioritisation. Phase 3: Recommendations and guidelines for optimisation of antidote preparedness were developed and validated.

Results: Thirteen risk themes were identified and validated by a focus group. The top three risk themes were (1) Problematic sourcing of antidotes, (2) Inadequate antidote stocking and (3) Lack of a national strategic plan. Guidelines were developed to address the top three risk themes identified and to optimise local antidote emergency preparedness. The guideline for problematic sourcing of antidotes was targeted towards the central procurement unit and the Department of Health Policy. The guideline on stocking antidotes was divided into two to account for both individual toxicological cases and mass casualty events. This guideline was directed towards the Antidote Committee, the Contracting Authority, and healthcare professionals responsible for the stocking and handling of antidotes. The guideline for the lack of a national strategic plan addressed national bodies for the development of a single national antidote database, giving access to validated data which is accessible to authorised personnel.

Conclusion: Findings indicate a critical need for healthcare system optimisation in emergency preparedness to ensure the timely availability of antidotes. This study recommends (i) setting up an audit team to review and assess the management of antidotes in practice and provide feedback to the Antidote Committee for improvement, (ii) setting up a training programme for key personnel involved in the handling of antidotes and other personnel involved in case of a mass event and, (iii) establishing international cooperation agreements at European and global levels to facilitate availability and accessibility of antidotes in a timely, organised manner especially in cases of mass exposure. The developed guidelines seek to harmonise the processes involved in managing emergency preparedness through a risk-based approach.

Risks of self-medication

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Introduction: The relevance and impact of self-medication in the primary healthcare system is an area that receives focus as a means to empower patients and increase efficiency in the healthcare ecosystem.

Objective: To determine the prevalence and risks associated with self-medication practices from the perspective of customers, medical practitioners and pharmacists.

Method: Two questionnaires regarding the risks of self-medication, one intended for the general public and one for healthcare professionals, were developed and validated. Questionnaires were disseminated through social media and physically through a community pharmacy. Data analysis was carried out.

Results: The general public's questionnaire was answered by 261 participants, of which 71% (n = 184) were female, and 77% (n = 201) admitted to self-medicating, with the main reason being that the illness was minor (62%, n = 163). The most popular type of medication used for self-medication was cough syrups (63%, n = 165), whilst the main risk associated with self-medication was the incorrect choice of treatment (54%, n = 140). The correlations between the level of education and patients' understanding of the meaning of self-medication (p = 0.039) and patients' level of education and whether or not they self-medicate (p = 0.022) were statistically significant. The healthcare professional's (HCP) questionnaire was answered by 66 participants, of which 58% were female (n = 38) and 64% were doctors (n = 42). The main reason HCP believed patients self-medicate was due to the waiting times at healthcare facilities (73%, n = 48), whilst menstrual pain, cough and common cold were the main medical issues HCP think patients opt to self-medicate for (74%, n = 49).

Conclusion: A main reason for the general public to self-medicate is the understanding that the illness is minor. Healthcare professionals reported that access to medical facilities may be a driving factor for self-medication. Further studies could be undertaken to assess risks associated with self-medication in terms of misuse of medication or delay in seeking medical advice.

Pharmaceutical inventory management practices across different levels of government Health Care institutions (GHCIs) in Batticaloa District, Sri Lanka

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Introduction: Access to essential medicines is crucial for the health of citizens. Effective inventory management practices in health facilities are critical for ensuring the availability and quality of essential medicines (EMs). Maintaining the recommended temperature range for proper cold chain storage is essential as it directly impacts the quality and safety of drugs.

Objective: The purpose of this study is to assess the pharmaceutical inventory management practices at various levels of Government Health Care Institutions (GHCIs) in Batticaloa District, Sri Lanka.

Method: An institution-based cross-sectional survey was conducted among six GHCIs in Batticaloa District, Sri Lanka, during April 2023. The six GHCIs comprised one teaching hospital (TH), two base hospitals (BH-A and BH-B), two divisional hospitals (DH-A and DH-C), and one primary health care unit (PMCU). Data was collected using interviewer-administered questionnaires and observational checklists adapted from the Logistics Indicators Assessment Tool (LIAT).

Results: All GHCIs maintained daily registers to manage pharmaceuticals, recording used quantities and stock on hand. While four GHCIs had previously used a computerised ordering system, at the time of the visit, only BH-A utilised the newly introduced Management Information System (MIS). The average duration between ordering and receiving medicines was reported as "less than two weeks" across all GHCIs. All GHCIs had undergone a “supervision visit” at least once in the last six months and had undergone the audit for inventory management of medicines at least once in the last three months. Stockouts were reported in BH-A, DH-A, and DH-C, with ciprofloxacin (500mg/250mg) being the most common stockout medicine. Principal personnel managing medical supplies had undergone inventory management training during their job training. Pharmacists were primarily responsible for managing medical supplies in four GHCIs, while dispensers handled this responsibility in DH-C and PMCU. Only BH-A and DH-A reported having a surplus of certain medicines, reporting Salbutamol- Metered Dose Inhaler, Tramadol 50 mg tab and Enoxaparin at BH-A and Risperidone at DH-A. Only TH and BH-A had placed ‘emergency orders’ for some products during the last three months.

Resupply quantities of medicines were determined internally by all GHCIs. Except for TH, all five GHCIs had transported medicines to their facilities through a regional supplier (Regional Medical Supplies Division). TH collected pharmaceuticals from direct local suppliers (Medical Supplies Division). Refrigerators were functional in four facilities, with only three maintaining up-to-date temperature charts. None of the GHCIs had a supply of paraffin or Liquified Petroleum Gas (LPG) for cold chain and sterilisation purposes.

Conclusion: While all GHCIs maintained an acceptable level of record-keeping, it is recommended that the newly introduced computerised MIS be adopted and proper training for personnel involved in pharmaceutical inventory and cold chain management be provided.

Delivering sustainable, effective, and collaborative care- findings from international insight boards on professional practice

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Introduction: Worldwide, pharmacists are actively contributing to the development of innovative and sustainable healthcare models. To achieve this, and in alignment with FIP Development Goal 4 (Advanced and Specialist Development), pharmacists must deliver workforce development strategies aimed at cultivating advanced skills and high levels of professional agency. By addressing these common objectives, valuable insights can be gained from diverse approaches, systems, and drivers employed by various nations.

Objective: To explore the global differences in professional postgraduate career pathways and structures in pharmacy and the extent of pharmacist integration in multidisciplinary healthcare teams, collaboration, and autonomy.

Method: Two International Pharmaceutical Federation (FIP) Insight Boards were convened in June and September 2023. The first meeting focused on post-registration career pathways and continuing professional development strategies. The second meeting delivered an open stakeholder discussion on needs-based postgraduate skills development, service integration with other healthcare stakeholders, and skills development across different professional domains (professional practice, leadership, education, and research).

Results: Fifteen countries were represented, including participants from South Africa, Zimbabwe, Nigeria, Jordan, Lebanon, Yemen, Indonesia, Japan, Australia, New Zealand, Brazil, Chile, Switzerland, Germany, and Scotland.

Most participants presented national requirements for continuing professional development at the individual level. However, limited formal postgraduate career pathways existed. Sectoral, organisational, and skills-based siloes within pharmacy were common.

Multidisciplinary service integration, although suboptimal, was increasing in most countries. This was typically more established in hospital and specialist settings, but less so in primary care or community pharmacy.

Participants described common professional values and aspirations. Key challenges across most regions included systemic underutilisation, sub-optimal levels of societal recognition and autonomy, and medical-dominated hierarchical professional healthcare structures. Enablers included a focus on public health, fostering multidisciplinary relationships, legislatory and/or regulatory levers, and macro-economic reimbursement strategies.

Conclusion: Challenges in establishing an effective and sustainable pharmacy workforce model are common across all global regions. The final FIP Insight Board report will be published to parallel the FIP World Congress in Cape Town 2024.

Comparison of pricing of medicines in different countries

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Introduction: Variations in the prices of medicines in different countries could be due to differences in their international policies and socio-economic status. The cost of medications can impact the availability and general health of the population. Discrepancies in price differences between nations can raise concerns about the affordability and accessibility of medications.

Objective: To identify and compare the cost of antibiotics and anti-diabetic drugs available in Malta with four other countries.

Method: The countries to be included in the comparative study were identified as Malta, Greece, Slovenia, United Kingdom, and India. Antibiotic medications (n = 12) included in the study were macrolides (n = 2), fluoroquinolones (n = 2), urinary infection salts (n = 2), cephalosporins (n = 4), aminoglycosides (n = 2); antidiabetic drugs (n = 10) included were: biguanides (n = 1), sulfonylurea (n = 3), DPP4 inhibitors (n = 2), SGLT2 inhibitors (n = 1) and insulins (n = 3). For each country, the least expensive retail product with the same active ingredient, dosage form, and potency were compared. Prices of medicines for each country were obtained through India-community and hospital pharmacies, Malta-community pharmacies, UK-British National Formulary 85th Edition, Slovenia-National registers of authorised medicines, and Greece-National registers of authorised medicines. Retail unit prices of selected medicinal products were converted to Euro wherever required and analysed per unit dosage form. For each medication, the price, range, average, and standard deviation between countries were computed.

Results: For anti-diabetic drugs, the range varied from India (0.44€), Slovenia (0.33€), UK (1.38€), Greece (1.00€) and Malta (2.05€), for sitagliptin with a similar trend for the other antidiabetic drugs. For antibiotic drugs, the trend was similar where Clarithromycin ranged: India(0.20€), Slovenia (0.21€), UK(0.88€), Greece(0.41€) and Malta (1.13€), Levofloxacin: India(0.10€), Slovenia (1.26€), UK (3.02€), Greece (0.59€) and Malta (3.02€) and Fosfomycin: India (5.03€), Slovenia (7.65€), UK (5.69€), Greece (5.25€) and Malta (10€).

Conclusion: For identified antibiotic and anti-diabetic drugs the prices differ between the selected countries. Among the compared anti-diabetic drugs sitagliptin had the highest unit dose price. Understanding price variation between countries can help in understanding the impact on medication accessibility and affordability.

Responding to the pharmacist's need for well-being: A qualitative analysis

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Introduction: Pharmacists and pharmacy personnel in the United States continue to face stressful working conditions and express concerns about individual well-being. Staged walkouts and reports of poor working conditions placed a public spotlight on issues that pharmacists continue to experience.

The American Pharmacists Association (APhA) offers the Well-Being Index for Pharmacy Personnel (WBI), an online tool for individuals to evaluate distress, and the Pharmacy Workforce Well-Being Reporting (PWWR) tool for pharmacy personnel to confidentially report positive or negative experiences in the pharmacy workplace. The learnings gained from these tools may guide employers and professional

associations to ensure pharmacists are supported in the workplace.

Objective: To identify themes from WBI and PWWR learnings and to outline actions APhA is taking in response.

Method: A qualitative analysis of responses from WBI's open-ended response question on "What APhA can do" and PWWR learnings was conducted. Common themes in responses by pharmacists and pharmacy personnel were identified, and then the Association acted on these themes.

Results: Over 4,600 and 1,900 responses have been collected from the WBI and PWWR tools since their inception. The highest categories received from WBI were workplace conditions (818), well-being/stress (753), and community staffing (419). In the fourth quarter of the 2023 PWWR period, there were 675 total root causes listed for 128 negative experiences reported, averaging 5.3 root causes per reported experience. Nearly all negative experience reports (95%) were described as a "recurring problem". The themes identified were negative workplace conditions, pharmacist harassment by patients, and increased mental health challenges.

As a response to these learnings, in 2023, APhA acted in the following ways:

- Convened 65 pharmacists, pharmacy technicians, employers, and state boards of pharmacy executives for an event and subsequent report - Implementing Solutions Summit: Building a Sustainable, Healthy, Pharmacy Workforce and Workplace Summit.
- Created a shareable zero tolerance-for harassment flier to post in pharmacy practice settings and compiled resources for managing difficult patients.
- Collaborated with many pharmacy associations to establish National Pharmacy Workforce Suicide Awareness Day on September 20.

Conclusion: Using individual tools, APhA identified trends in working conditions and the well-being of pharmacists and pharmacy personnel. APhA concluded that profession-wide summits, advocacy efforts, and specific resources are required to address this complex issue affecting pharmacists and pharmacy personnel in the United States.

A quantitative comparison of selected essential medicines for the treatment and prevention of cardiovascular disease between the 2019 South African Standard Treatment guidelines and contemporary clinical practice guidelines

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Introduction: Cardiovascular disease (CVD) is a significant public health concern in South Africa, accounting for a considerable portion of the country's disease burden and one of the leading causes of death. The high prevalence of CVD in South Africa is associated with risk factors such as hypertension, Type-2 diabetes (T2DM) and dyslipidaemia. South Africa has committed to the sustainable development goals (SDGs) of reducing the burden of non-communicable diseases by a third by 2030, of which essential medicines are a key strategy.

Objective: To compare medicines, for CVD and contributing conditions, listed on the 2019 South African adult hospital level standard treatment guidelines and National Essential Medicines List (SA NEML) with contemporary local and international clinical practice guidelines. The study focused on hypertension, T2DM and dyslipidaemia which contribute the majority of CVDs in South Africa.

Method: The study employed a descriptive quantitative design using observational data from a desktop review. A comparator list was extracted from the 2019 SA NEML. National and international guidelines were then selected for comparison based on their global adoption. A consistency score (CS) was then calculated to quantify the extent to which the 2019 SA NEML conformed to contemporary clinical practice guidelines for the management of dyslipidaemia, T2DM and hypertension.

Results: The 2019 SA NEML had the highest consistency with hypertension clinical practice guidelines (56%) and lowest with the T2DM clinical practice guidelines (46%). There was a higher level of consistency with international guidelines (60%) when compared to local guidelines (47%). There was poor consistency with single pill combinations (SPCs) for the treatment of hypertension.

Conclusion: The 2019 SA NEML are moderately aligned to clinical guidelines. Decisions for inclusions and exclusions should be made available, along with the evidence in future versions of the SA NEML, to increase trust in the document.

Ghana's National Electronic Pharmacy Platform (NEPP): A case study for AI-driven transformation of regulation and policy

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Introduction: Artificial intelligence (AI) has the potential to revolutionise how regulations and policies are developed, offering data-driven insights and the ability to adapt to rapidly changing environments. Ghana's National Electronic Pharmacy Platform (NEPP), with its centralised dataset on e-pharmacy transactions and user behaviour, provides a valuable testbed for exploring how AI can be harnessed for policy transformation. This research fills a gap by examining the ongoing use of a real-world data platform to inform policy decisions within the pharmacy sector.

Objective: This research has three primary objectives: 1) Examine how AI techniques can extract actionable insights from NEPP data relevant to pharmacy regulation, 2) Analyse the mechanisms and challenges involved in translating these AI-driven insights into practical policy changes, and 3) Explore how AI, fueled by NEPP data, can contribute to a regulatory framework that keeps pace with technological advancements in the pharmacy and broader healthcare sectors.

Method: A mixed-methods approach is being employed. Quantitative analysis of NEPP data (including transaction records, medication types, and geographic trends) is used to train AI models. These models are designed to identify patterns such as potentially fraudulent activity, medication usage trends, and areas with disparities in access. Simultaneously, qualitative methods, including interviews with policymakers, pharmacists, and AI experts, examine the process of turning data insights into policy actions, addressing challenges and successes.

Results: The research is expected to yield several impactful findings during its progression. It will outline best practices for utilising AI-powered insights in the policymaking process, offering a template for other sectors seeking to modernise their regulatory frameworks. Additionally, the study aims to assess the real-world impact of AI-informed policies on e-pharmacy practices. Finally, the research will explore how continuous data streams from the NEPP can enable a regulatory environment that proactively responds to emerging trends and innovations in digital healthcare.

Conclusion: The study is anticipated to offer a blueprint for successfully leveraging AI within healthcare policy development. By examining the NEPP as a case study, the research will outline strategies for data-driven decision-making and the creation of adaptable regulatory structures that foster innovation while ensuring safeguards. Findings from this research have the potential to inform best practices across various sectors where AI is increasingly relevant for policy transformation.

Pharmacist vaccination preparedness

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Introduction: A global target established by the World Health Organisation is to ensure equity access to immunisation as a public health need to reduce the impact of vaccine-preventable infectious diseases. Pharmacists, with their accessibility and expertise in medication management, are well-positioned to contribute significantly towards immunisation efforts. A challenge to address is the confidence and preparedness of the pharmaceutical workforce, especially with regard to the administration of vaccines.

Objective: The purpose of this study was to develop a tool to assess the readiness of pharmacists to provide immunisation services so as to propose strategies that can improve pharmaceutical workforce readiness.

Method: A self-administered questionnaire was developed and validated by a diverse panel of experts encompassing community, hospital, regulatory sciences, and academia. The questionnaire was sent for validation to a five membered panel of pharmacists from various practice settings including community, hospital, and academia.

Results: The five-member panel addressed their concerns regarding the questionnaire. The questionnaire was tailored later as per the pharmacists' suggestions. The findings of this study promise to yield valuable insights into the readiness of pharmacists to assume a more prominent role in immunisation services. By capturing data on education and training experiences related to vaccine administration, the questionnaire sheds light on existing competencies and identifies areas for improvement. Furthermore, the analysis explores variations in preparedness across different practice settings, offering nuanced perspectives on the challenges and opportunities pharmacists encounter in diverse healthcare environments. Moreover, the questionnaire delves into pharmacists' perceptions of barriers and facilitators, providing crucial contextual information for devising targeted interventions. Additionally, the study evaluates pharmacists'

engagement in continuous professional development activities, highlighting avenues for ongoing skill enhancement.

Conclusion: The conclusions drawn from this study are poised to shape the trajectory of pharmacist involvement in public health initiatives in Malta. By identifying gaps in knowledge, competence, and confidence among pharmacists, this research informs strategies to fortify their role in immunisation services. Moreover, the insights garnered from pharmacists' preferences regarding training content pave the way for tailored professional development initiatives. Ultimately, this study serves as a cornerstone for guiding future interventions aimed at maximising the contributions of pharmacists to the advancement of public health goals in Malta and beyond.

A systematic review of teaching-competencies disaster medicine and preparedness among students in healthcare colleges

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Introduction: The rapid and frequent prevalence of disasters worldwide has been raising concerns regarding the ability of the healthcare system to manage and overcome disaster challenges. Implementing educational programs enhancing disaster preparedness among healthcare students is crucial, using the disaster preparedness competencies as cornerstones for these programs.

Objective: To determine the competencies used in teaching healthcare students about disaster to ensure well-preparedness.

Method: A systematic review was conducted to determine the competency and standards for disaster preparedness among healthcare professional students. Embase, Scopus, Cochrane, PubMed, Eric, ProQuest, and a grey literature ResearchGate were searched in September 2023 using the keywords “healthcare students OR disaster preparedness OR teaching module.” Two independent reviewers screened and extracted the data. While any conflicts were resolved by third author. Twelve articles were included in the final analysis and review. Quality assessment was conducted using three different tools national institutions of health (NIH) tool, JBI critical appraisal tool, and Cochrane risk of bias tool.

Results: 5,372 articles were screened, and 12 were eligible for full-text articles selected and included in the review. The main disaster preparedness competencies extracted from the findings are knowledge and triage, with some other common competencies such as confidence, communication, leadership and teamwork. Almost most of the 12 articles reported a significant increase in at least one of the five competencies after conducting an intervention. Most of the participants in the reviewed articles were nursing students, and studies were conducted in Asian countries.

Conclusion: This systematic review is the first to determine teaching competencies in disaster preparedness among healthcare professional students. Significant findings with 20 competencies were obtained to foster well-prepared future healthcare providers facing and controlling calamities.

Medication management needs of family caregivers of children and youth with special healthcare needs: Implications for pharmacy research and practice development

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Introduction: Children and youth with special healthcare needs (CYSHCNs) experience multiple, unmet medication related needs. CYSHCN are defined as “those who have, or are at increased risk for, a chronic physical, developmental, behavioural, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally. Here, the authors report on the establishment of a community-academic partnership to build a community based participatory research programme focused on researching and improving the medication related needs of CYSHCNs and their family caregivers. The authors also report findings from a priority setting study focused on identifying unmet medication management needs of family caregivers of CYSHCNs.

Method: This study was informed by a community based participatory research approach through a partnership between a community organisation (Indiana Family to Family, formerly known as Family Voices Indiana) and an academic partner (Purdue University College of Pharmacy). Partners employed a qualitative study design using focus group discussions with family caregivers of CYSHCNs. Participants were parents (biological or adoptive) or legal guardians who identified as primary caregivers of CYSHCNs currently living in Indiana, a Midwestern state in the United States. They were recruited through electronic invitations via email listserv or social media outreach from the community partner organisation. Two 90-minute focus group discussions were conducted, each with five to seven participants. Trained facilitators led discussion with caregivers to identify lived experiences, priorities, concerns, and challenges related to medication use across care settings: 1) during interactions

with primary care, specialty care, and hospital-based providers; 2) during interactions with pharmacy staff; 3) at home; and 4) during medication use at school. Focus group transcripts were analysed using qualitative content analysis. Ethical review and approval were provided by Purdue University.

Results: Family caregivers reported caring for more than one child with a chronic condition (range 1-3 children; ages ranging 5 to 17 years), as well as being responsible for managing multiple medications at home (range 2-12 prescribed medications). Four major themes emerged from analyses: 1) Challenges in communicating and coordinating medication changes across multiple healthcare providers; 2) Systems to support medication use by multiple members of the household; 3) Navigating medication support distributed across stakeholders with varied expectations, rules, and priorities; 4) Evolving nature of medication management needs and support to address ongoing medication-related concerns. These will be further discussed with example quotes and additional contextual information.

Conclusion: Improving medication use outcomes for CYSHCNs and their family caregivers requires an in-depth understanding of the lived experiences of family caregivers managing medications for their children.

Assessing knowledge, attitudes, and behaviours regarding sexual and reproductive health (HPV, contraception, and HIV/AIDS) on the adoption of online platforms and telemedicine interventions in South Africa

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Introduction: The evolving landscape of healthcare has witnessed a transformative surge in the integration of technology, with telemedicine and online platforms emerging as pivotal components in reshaping the delivery of health information and services. This shift is particularly pertinent in the context of Adolescent Girls and Young Women (AGYW). Issues surrounding contraception and the prevention of HIV/AIDS demand accessible and tailored healthcare interventions to effectively address the diverse needs of this demographic. Recognising the potential of telemedicine and online platforms to bridge healthcare gaps, this research endeavours to explore the attitudes, behaviours, and perceptions of AGYW towards these digital health interventions for HPV, contraception, and HIV/AIDS.

Method: This study adopted a quantitative research approach to systematically investigate the knowledge, attitudes, behaviours, and perceptions of AGYW aged 18 to 25 concerning Human Papillomavirus (HPV), contraception, and HIV/AIDS. The focus of the research was on understanding AGYW's willingness to utilise telemedicine and online platforms for healthcare needs within the context of these reproductive health issues. Surveys will be distributed electronically to the entire population of AGYW by email, ensuring broad coverage. This study employs a cross-sectional research design to comprehensively investigate the attitudes, behaviours, and perceptions of AGYW aged 18 to 25 years.

This study adopted a total population sampling strategy to ensure a comprehensive and inclusive examination of the knowledge, attitudes, behaviours, and perceptions of AGYW aged 18 to 25 regarding Human Papillomavirus (HPV), contraception, and HIV/AIDS.

Utilising online platforms, the surveys will be distributed to all subscribers of the targeted online magazine, providing a direct and accessible means of reaching the entire population.

The sample size for this study encompassed a substantial population, consisting of 218,279 subscribers to the targeted online magazine. The decision to include such a large and diverse sample size is rooted in the study's commitment to conducting a total population sampling, ensuring a comprehensive understanding of the knowledge, attitudes, behaviours, and perceptions of AGYW aged 18 to 25 concerning Human Papillomavirus (HPV), contraception, and HIV/AIDS.

A structured questionnaire utilising a 5-point Likert scale will serve as the primary survey instrument. The Likert scale, ranging from strongly disagree to strongly agree, will facilitate nuanced responses.

Quantitative data collected through Likert scale responses will be analysed using the Statistical Package for the Social Sciences (SPSS).

Conclusion: The relevance of this study was underscored by the pressing need to understand and address the unique healthcare challenges faced by AGYW aged 18 to 25 years. The exploration of their knowledge, attitudes, and behaviours concerning Telemedicine and online platforms for Human Papillomavirus (HPV), contraception, and HIV/AIDS is crucial in shaping targeted interventions.

Assessing the differentiated models of care using last-mile delivery in the Western Cape Province, South Africa

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Introduction: Differentiated Models of Care within the Western Cape Province aims to align with existing services as

well as introduce innovative approaches in an integrated manner. These models offer the Primary Health Care facilities decongestion strategies that reward adherent and stable chronic patients with a faster service, encourages economic opportunity and agency to choose their preferred medication collection service through different available options. The added benefit is to encourage adherence throughout the patient's treatment journey.

Method: A situational analysis was undertaken within the Western Cape Province to assess all differentiated models of care piloted and implemented to be collated for inclusion into a Provincial framework. The three main components identified for models of care are within the facility, community-based services and public-private providers (PPP). A model aligned to PPP is Iyeza Health, which offers chronic medicine home-delivery service in townships by collecting medicines from the public sector/clinics and delivering them to the patient's doorstep through a bicycle delivery model.

- Self-selected participants above 18 years old who are on chronic medication voluntarily registered for the home delivery service while waiting at the public health clinic pharmacies
- Following written consent from the patient, a courier rider is notified every 28 days to pick up and deliver chronic medication to the participant's address using a mobile app.
- A researcher administered a telephonic acceptability questionnaire within two weeks of the delivery.

Results: 2050 (55%) of 3720 participants who enrolled were successfully contacted.

- 1410 of these participants (68% female)
- No adverse experiences were reported.
- The majority (97%) reported satisfaction with delivery times days, with 7 participants reporting non-delivery.
- 10% complained of out-of-stock medication
- 3% of medication was undelivered and returned to the clinic pharmacy at the end of the day
- Nearly all participants considered the service to be confidential (94%)
- The service was rated 4.7 out of 5, with 1715 (84%) stating that their experience of home delivery was better than health clinic-based collections.

Conclusion: The findings of the models within the Western Cape Province indicate that offering an alternative care models to stable chronic patients is effective and implementable. Each model, however, needs to be specific to the context.

Market violence through destructive entrepreneurship: Assessing institutional responses to the proliferation of counterfeit traditional and alternative medicines in Ghana

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Introduction: This multidisciplinary study seeks to determine the nature and structure of the informal markets for counterfeit medicines, the co-factors underpinning the demand and supply of counterfeit Western allopathic medicines (WAM), traditional and alternative medicines (TAM), and potential institutional responses in Ghana.

Method: This study uses an interpretive research approach. It deploys a synthesis of longitudinal ethnographic fieldwork, with multiple repeated visits for observations, document analysis, interviews, and focus group discussions.

Conclusion: The study identifies five major interrelated discoveries that point to the need for urgent institutional responses: Approaches to global health governance pay little attention to the complex economic gamut of TAM, including herbal medicines. The rise in necessity entrepreneurship and the availability of easy-to-use packaging and advertising technologies have made TAM a major competitor of WAM. The informal markets for WAM and TAM are structured to evade formalised interventions and regulations. Standardisation allows destructive entrepreneurs to derive advantage from economies of scale and reduce production costs, allowing the sector to flourish with little economic risk while inflicting violence on consumers. Personalisation and co-creation of medicine with consumers have the added psychological effect of increasing consumer confidence. This, however, enlists consumers in the market to be violent against themselves. Social implications: Destructive entrepreneurship, whether inadvertent or criminal, creates benefits for groups and individuals but negatively affects public health on various levels. Originality: Mitigation and interventions that ignore the informal TAM market of destructive entrepreneurship only answer a part of the big question of how to guarantee patient/consumer safety from the threats of all counterfeits.

Likelihood and differences across Arabian Gulf Countries: A comparative analysis of medication home delivery service during the COVID-19 Pandemic

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Introduction: The outbreak of COVID-19 has posed significant challenges to healthcare systems globally, leading governments to adopt strategies to mitigate virus transmission risk while ensuring continued access to healthcare services. Consequently, several countries, including the six Arabian Gulf countries, have introduced the Medication Home Delivery Service (MHDS).

Objective: This research aims to outline and compare the observed likelihood and differences in implementing Medication Home Delivery Services (MHDS) across the six Gulf Cooperation Council (GCC) countries in the middle of the COVID-19 pandemic.

Method: The data for this study was gathered through a comprehensive review of published literature sourced from databases such as PubMed, Scopus, Web of Science, Embase, International Pharmaceutical Abstracts/ProQuest, as well as from recognised organisational websites and Google searches. Furthermore, consultation with subject matter experts from the six GCC countries was conducted to augment the review with additional insights. The analysis focused on four primary themes: target demographics, delivery methodologies, logistical aspects of delivery, and identifying challenges and opportunities within the context of Medication Home Delivery Services (MHDS).

Results: The electronic search resulted in 5,178 academic studies and 117 pieces of grey literature. Among the 97 articles screened, 47 were deemed suitable for inclusion in this review (comprising five studies and 42 pieces of grey literature). The analysis revealed that the Medication Home Delivery Service (MHDS) models implemented in the GCC countries were strategically crafted to ensure convenient medication access while prioritising adherence to COVID-19 safety measures. This study encompassed a comprehensive examination of all pertinent aspects of MHDS across each GCC nation, emphasising the delivery model, target demographics, types of medications, and logistical arrangements, as well as identifying challenges and opportunities for enhancement.

Conclusion: With the fact that variations existed, the implementation of MHDS across all GCC countries, has demonstrated its efficacy in promoting patient-cantered care and facilitating convenient medication access throughout various pandemic stages. Although the findings underscore achievements and endeavours to tackle obstacles, there are better chances in the horizon for future enhancement.

An analysis of the effect of a framework contracting pricing policy on the medicines claims cost of Ghana's National Health Insurance Scheme

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Introduction: As part of the Ministry of Health (MOH) of Ghana's efforts to reform the pharmaceutical supply chain, a framework contracting (FWC) pricing policy for selected essential medicines was introduced in 2017 and adapted by the National Health Insurance Authority (NHIA) in 2020. This reform was intended to guarantee the supply of good quality and reasonably priced medicines and contribute to reducing the medicines claims bill of the National Health Insurance Scheme (NHIS). Sixty-two cost-driver medicines of the scheme were selected to be reimbursed by NHIA at the FWC prices instead of at prevailing market prices. Three contracts have been awarded since inception, with implementation traversing the COVID-19 era, which had observable economic effects on the policy.

Objective: This study seeks to ascertain the cost savings or otherwise to the NHIA from the implementation of the FWC pricing policy for selected medicines on the NHIS Medicines List.

Method: Data of the 2019 NHIA medicine price survey of 62 FWC medications were compared to the MOH FWC prices for 2020. Differences in prices were determined for each medication and used to compute differences in costs based on member utilisation of the medicines in 2020. A similar comparison was performed using the results from the 2021 medicine price survey and the 2022 FWC prices.

Results: It was determined that the 2020 FWC prices were on average 34.38% (7.80% to 92.00%) lower than the survey prices obtained in 2019. Five medicines had higher FWC prices and accounted for averaging out the ranges reported. Medicine claims reimbursement for all the 62 FWC medicines was 106% less than reimbursement would have been with survey prices. This resulted in cost savings of GHS 33,275,932.40 and reflected the objectives of the policy- to assure medicine availability at reasonable cost to the publicly funded insurance scheme. The comparison between the 2021

survey and 2022 FWC prices showed that some FWC prices were an average of 12.41% (1.43% to 70.73%) lower than survey prices, with thirteen FWC prices being higher. Its implementation resulted in an extra claims cost of GHS 966,608.37, which was 1% more than if survey prices were used for reimbursement. This increased cost to the scheme, albeit marginally, could be attributed to the FWC prices being adjusted upwards twice in response to requests from suppliers who were unable to meet initial lower quotes. These adjustments were attributed to the exchange rate depreciation and its effects on costs of businesses during COVID-19.

Conclusion: The observed cost savings at the onset of the FWC policy implementation point to a potential for the NHIA to leverage its purchasing power as the largest payer for health services to negotiate reasonable medicine prices. This analysis, however, also reveals the possibility for gains from economies of scale to be eroded by external factors and thus calls for a concerted effort to address such unintended influences on the pharmaceutical supply chain. Further analysis of the effect of FWC and external economic conditions on NHIS reimbursement is recommended to inform policy-making and implementation.

How to ensure equitable access to essential cancer medicines in low- and middle-income countries?

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Introduction: While 70% of global cancer deaths occur in low- and middle- income countries, it is estimated that less than 50% of the cancer medicines on the WHO Model List of Essential Medicines are available in these countries. Pharmaceutical companies offer access programmes in some countries, but their impact remains unclear.

Over 80% of children diagnosed with cancer in high-income countries will be cured of the disease, in contrast to rates as low as 10% among children diagnosed with cancer in low- and middle-income countries. Moreover, despite bearing almost 80% of the burden in disability-adjusted life years, less than 5% of the global resources for combating cancer are made available to children in low- and middle-income countries. The inequity increases in the case of newer products: 80% of cancer monoclonal antibodies (mAbs) are sold in the US, Europe, and Canada, leaving only 20% for the remaining 85% of the world population.

While pharmaceutical companies make their new cancer medicines available at high, and sometimes excessive, prices in high-income countries, they often fail to register the same medicines in low-income countries. In middle-income countries, the products are being registered but high prices remain a barrier to access. Overall, in Africa, cancer deaths are on the rise and are expected to reach 1.4 million by 2040, while in high-income countries over the same period, the rate is expected to decline by 32%.

Objective: This study aims to analyse cancer access partnerships and assess the level of human rights compliance of pharmaceutical companies with respect to essential cancer medicines. This hypothesis is that pharmaceutical companies need to strengthen their access programmes in low- and middle-income countries in line with their human rights responsibilities. Previously identified steps included registering all essential cancer medicines in low- and middle-income countries, and offering them at fair or cost prices, or licensing their products through the Medicines Patent Pool to generic companies.

Method: A literature review will be conducted to analyse cancer-related access partnerships in the context of a low- and middle-income country: Uganda and South Africa. Semi-structured interviews will be conducted with partnership stakeholders. Interviews will explore themes of the WHO Equitable Access to Medicine framework and be analysed through thematic analysis. Access to essential cancer medicines in high- and low-income countries will be assessed using a legal and human rights framework.

Results: Study results will become available in July 2024. The analysis of the interviews will provide insight into the roles and interplay of stakeholders in developing access partnerships for essential cancer medicines in Uganda and South Africa. The human rights analysis will research inequalities in access to essential cancer medicines and provide data to advocate for better access to cancer medicines at affordable prices.

Conclusion: Conclusions will become available in July 2024.

ABEM: Programme: Solidary medicine network – The impact assessment

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Introduction: The programme was created in 2016 to give response to a social problem: the lack of access to prescription medicines for people who cannot afford them.

One in ten Portuguese cannot buy the medicines that they need because they do not have money to pay for them.

Objective: This programme, aimed to analyse and measure its impact across different areas.

Method: The impact assessment of abem was conducted by an external independent entity (Sair da Casca) and considered the resources and activities developed since its launch, from May 2016 until December 2022. Based on the changes identified and using the Theory of Change logical model, the Programme's contributions to these changes were analysed, which allowed the definition of the analysis indicators to identify the main impacts of the Programme.

Results: This evaluation confirms that the Programme generates substantial positive changes. The major impacts in beneficiaries were:

Health: an improvement of their health condition, through the therapeutic compliance that they were able to do because they could have access to the medicines they need.

Quality of life: an improvement of their quality of life since they didn't have to cut down on other essential expenses so they could buy prescription medicines:

Inclusion: the access to the medicines that the abem: card allows is essential to the feeling of inclusion that this beneficiaries experience, along with an increase in autonomy.

The potentially avoided costs to the National Health Service are extremely relevant; it is possible to estimate that only in emergency episodes and hospitalisations avoided by the therapeutic compliance provided by the album, more than 24 million euros were saved between May 2016 and December 2022. If Abem reached the approximately 920.000 Portuguese that every year can't buy the medicines they need, an investment of 176 million euros would be necessary to save more than 711 million euros in hospitalisations and emergency episodes.

Access to prescription medicines also impacts the Social Security System, because if active people become less disabled, fewer subsidies are paid to cover these risks, leading to a reduction in public expenditure associated with sickness and disability.

Abem: also contributes to the achievement of a fundamental value in this society, Universality, because it mitigates geographical asymmetries through its presence distributed by the national territory.

Abem: has a contribution to the following Sustainable Development Goals (SGD): SGD 1, SGD 3, SGD 10, SGD 11 and SGD 17.

Policies and practices of psychoactive prescription medication misuse and abuse: a scoping review

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Introduction: Psychoactive Prescription Medication (PPM) plays a crucial role in managing various health conditions. However, the misuse and abuse of these medicines pose significant challenges, particularly in lower to middle income countries. Understanding the evidence, policies, and practices related to PPM misuse and abuse is essential for effective healthcare delivery.

Objective: The objective of this scoping review is to understand the extent and type of evidence in relation to the policies and practices related to the misuse and abuse of psychoactive prescription medication. A better understanding of these factors may lead to the effective development of intervention and prevention strategies in the future.

Method: The scoping review methodology guided by Arksey and O'Malley, and Peters et al was used. Comprehensive searches based on PPM and related policies and practices were conducted in PubMed, ScienceDirect, Scopus, JSTOR, BASE databases. Studies not included were older than 1960, not in English, animal studies and inaccessible complete papers to the researcher. Articles were screened at the title and abstract level and at full text by two reviewers. One reviewer extracted data that were analysed descriptively to map the available evidence.

Results: Key questions this review aimed to address include definitions and differences between misuse and abuse, barriers and facilitators to effective interventions, collaboration among stakeholders (researchers, health professionals and government), and the health professionals' role in practice.

Conclusion: The results of this study will help inform a larger study, which aims to understand the nuances and complexities of PPM misuse and abuse in South Africa. Gathering data in this field will assist with informing the development of intervention and prevention strategies catered within this diverse country's context.

Coping with type-2 diabetes: Insights from South African outpatients

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Introduction: Individuals living with Type-2 diabetes mellitus must contend with numerous and significant stressors encompassing physical, emotional, and psychosocial difficulties inherent in managing this condition. This raises the question of what enables them to thrive despite the negative aspects associated with this condition. As many of these individuals manage to access a variety of resources, their experiences can be examined through the lens of salutogenesis, which is employed to analyse the mechanisms whereby people succeed in preserving their well-being while dealing with stress and difficulties. Despite the abundance of international research on the concept, studies of salutogenesis in Type-2 diabetes patients in developing countries are rare. Even less information is to be found on the selection and utilisation of protective coping strategies/GRRs that may promote improved health in public-sector Type-2 diabetes mellitus patients.

Objective: This study sought to explore the lived experiences of South African public sector outpatients living with Type-2 diabetes mellitus and gain insight into the salutogenic coping skills they use to cope with the condition.

Method: Focus group discussions and individual in-depth interviews were conducted to allow for in-depth exploration of the lived experiences and coping strategies of 18 outpatients from primary health care clinics in Makhanda. The interviews were then transcribed and coded. Themes were developed from the coded data using Braun and Clark's thematic analysis approach with the assistance of Atlas.ti qualitative data analysis software.

Results: The lived experiences converged into four major themes: The emotional and psychological burden of Type-2 diabetes mellitus, the impact of diabetes on structure and predictability in life, and health and health perception. Coping strategies described by the participants included problem-focused coping (e.g., adhering to medicinal and dietary requirements), emotion-focused coping (e.g., religiosity, positive attitude, and acceptance), and social support.

Conclusion: Individuals living with Type-2 diabetes mellitus experienced a wide range of challenges beyond the pathogenesis of the condition and used various coping strategies to assist them with managing the condition. Healthcare professionals, such as pharmacists, should take cognisance of psychosocial factors in the management of Type-2 diabetes mellitus to foster positive coping strategies in patients. This study contributes to the expanding body of salutogenic research aimed at understanding well-being and adaptation among individuals with Type-2 diabetes mellitus, thus offering valuable insights into the holistic management of this chronic condition.

Side effects of psychotropic medications experienced by people living with severe and persistent mental illness

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Introduction: Psychotropic medications are critical in the management of severe and persistent mental illness (SPMI), which is a cluster of conditions including bipolar disorder, schizophrenia, moderate to severe depression and moderate to severe anxiety disorders. Although psychotropic medications may be effective in improving symptoms and reducing the risk of relapse, these medications have side effect profiles which may negatively impact consumers' quality of life. Side effects may be so troublesome that consumers choose to not take their medications, potentially leading to sub-optimally managed mental illness and increased risk of relapse and hospitalisation. Given the significance of the potential impact of these side effects, it is imperative to screen for these and explore the consumer experience of using psychotropic medications.

Objective: This study aimed to explore self-reported side effects of psychotropic medications in a sample of people living with SPMI.

Method: Consumers living with SPMI across four Australian regions were recruited from community pharmacies (n=25) and randomised to the intervention group as part of the Bridging the Gap between Physical and Mental Illness (PharMIbridge) randomised controlled trial between September 2020 and February 2021. As part of the PharMIbridge intervention, consumer participants and pharmacists completed a multifaceted intervention which included medication review. Responses to the validated My Medicines & Me (M3Q) questionnaire were also recorded. The M3Q asks consumers to identify side effects, report on the frequency of side effects, and rank the most bothersome side effects, among other information. Responses were analysed descriptively.

Results: Community pharmacists conducted the PharMIbridge intervention with 156 consumer participants.

Participants had a mean age of 48.1 years (SD: ± 12.6 years), predominately identified as female (53.8%, n = 84) and resided in metropolitan areas (55.8%, n = 87). More than 90% (n = 141) of consumers were prescribed more than one psychotropic medication, most frequently an antipsychotic (82.7%, n = 129). Frequently reported side effects included feeling tired during the day, which was reported by more than two-thirds of participants (68.6%, n = 107), followed by difficulties waking up fresh in the morning (57.7%, n = 90). Mood-related side effects such as feeling anxious (58.3%, n = 91), agitated (51.3%, n = 80), or sad (51.3%, n = 80) were commonly reported. The three most bothersome categories of side effects were mood, sleep-related, and weight and appetite issues. Side effects ranked as the most bothersome were experienced daily by most participants (73.7%, n = 115). More than a quarter of participants (29.5%, n = 46) reported stopping their medications due to the side effects.

Conclusion: Using a validated tool, this study was able to characterise the side effects experienced by a sample of consumers living with SPMI, with sleep-related issues reported most frequently. The number of consumers reporting mood-related issues is concerning and these issues were reported as the most bothersome category by these consumers. Further work is needed to develop an understanding of consumers' lived experience of using psychotropic medications and the impact of side effects on quality of life to improve the support of people living with SPMI.

Intersectionality of race and gender in pharmacy and other health professions

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Introduction: The intersectionality of race and gender in the pharmacy profession has not been studied in depth and is therefore not well understood. Up until the 1990s, pharmacy was a white, male-dominated profession. The pharmacy profession has been experiencing a demographic shift in the past few decades, particularly in the United States, the United Kingdom and Canada, becoming a career choice for many women (of all races) due to the possibility of flexible work schedules, particularly in retail/community pharmacy settings. While some of these changes have been captured in the extant literature, applying an intersectional lens or framework to better understand the contextual issues of professional development for pharmacist women of colour (WoC) remains to be addressed.

Objective: This scoping review aimed to (i) identify literature that addresses disparities affecting WoC; and (ii) describe strategies to support WoC in pharmacy and other health professions.

Method: The literature searches were conducted in multiple databases, including PubMed and MEDLINE (Ovid), and Google and Google Scholar were used to "hand search" further articles, including grey literature. Three independent reviewers reviewed and screened articles for inclusion in accordance with a guide. The search included articles on pharmacy or healthcare professions published in English and which met three content criteria: racial disparities/inequities, professional development/career advancement, and women or gender disparities. The review was broadened to include other healthcare professions as the literature pointed to similar disparities affecting WoC across the healthcare industry.

Results: A total of 31 articles were included: pharmacy (7), medicine (17), nursing (1), other (4), and multiple health professions (2). Majority (n=26) were from the U.S. Key findings included underrepresentation of women and minority groups, inequities in professional advancement and leadership positions for WoC, and greater dissatisfaction and attrition among minority and women professionals. In pharmacy specifically, notable findings included lack of representation of WoC in leadership positions; and a dearth of WoC in academic teaching. A study of student pharmacists of colour found higher confidence in their ability to obtain a job in community or hospital pharmacy but less confidence in engaging in academic teaching or the pharmaceutical industry. Furthermore, the term "intersectional invisibility" was used to describe the marginalisation experienced by WoC and the harms perpetuated by efforts that do not take into account the experiences of discrimination of these women and how these differ from those of minoritised men.

Conclusion: WoC in pharmacy and other health professions face unique and distinct challenges and barriers in their professional careers resulting from the intersectionality of not only race and gender but also lived experiences and opportunities. Strategies to improve diversity and representation of women from minoritised groups should include an intersectional framework or lens and be critically evaluated. The next step in this ongoing research is to develop an intersectionality framework that addresses structures, policies, and processes that perpetuate inequity and inequality in the pharmacy profession along with areas for education, growth, and continuous improvement.

Service points for pharmacists and pharmacy students in the continuum of care framework for maternal and child health in South Africa

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Introduction: The World Health Organisation (WHO) defines a health workforce as “all people engaged in actions whose primary intent is to enhance positive health outcomes". Although pharmacists are often excluded from the maternal and child health (MCH) workforce, their role is outlined in the International Pharmaceutical Federation (FIP) STATEMENT OF POLICY on the effective utilisation of Pharmacists in improving maternal, newborn and child health (MNCH). In addition, the roles align with the WHO maternal, newborn and child health interventions. The South African Pharmacy Council Good Pharmacy Practice manual recommends the roles of pharmacists in MCH, although the national policy does not recognise these roles.

Objective: Using the continuum of care framework for maternal and child health that was adapted for the South African health system, service points for pharmacists and pharmacy students were identified to promote their roles in MCH.

Method: A review of published literature and policy documents from pharmacy regulatory authorities was carried out to identify the roles of pharmacists in MCH. The identified roles were adapted to the South African continuum of care framework and health system.

Results: Pharmacists in South Africa play some role at every level and stage of the continuum of care. The roles range from providing health education and promotion to preventive care, identifying at-risk patients, providing referrals, and medicines management, storage and distribution. Specific roles include immunisation, nutrition advice for mothers and children, prenatal care, breastfeeding support, family planning and contraception.

Conclusion: Recognising and integrating the role of pharmacists in MCH into national policies and programs will increase patient access to MCH services and reduce the workload on the overburdened public healthcare system.

Anticholinergic burden is associated with poorer health-related quality of life among adult inpatients and outpatients in a resource-limited setting: a cross-sectional study

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Introduction: Anticholinergic medications are now widely acknowledged for their unfavourable risk-to-benefit profile owing to their adverse effects. Health-related quality of life (HRQoL) is commonly regarded as a crucial person-centred outcome. However, studies measuring the effect of anticholinergic burden on HRQoL are limited. Moreover, there were no studies measuring the effect of anticholinergic burden on HRQoL in a general population in a resource-limited country.

Objective: This study aimed to examine the association between anticholinergic burden and HRQoL among hospitalised and ambulatory patients from a resource-limited setting.

Method: In a cross-sectional study, the authors utilised a questionnaire and medical records to collect data from a convenience sample of adult patients attending both inpatient wards and ambulatory clinics of the University of Gondar Comprehensive Specialised Hospital between April and September 2022. The anticholinergic burden was measured by the anticholinergic cognitive burdens scale (ACBS), while HRQoL was measured using EQ5D-index (Euroqol-5 dimensions-5-Levels index) and EQ5D-VAS (visual analogue scale). Descriptive statistics were used to summarise the socio-demographic and clinical characteristics of participants. Linear regression was used to assess the impact of high anticholinergic burden (ACBS score ≥ 3) on EQ5D-index and EQ5D-VAS.

Results: A total of 828 patients participated in this study (median (IQR) age was 45.0 (30, 60) and 55.9% were female). On multiple linear regression analysis, high anticholinergic burden was associated with a statistically significant decline in HRQoL, as evidenced by reductions in both EQ5D index (-0.174 (-0.250, -0.098)) and EQ5D-VAS scores (-9.4 (-13.3, -5.2)).

Conclusion: A significant association between higher anticholinergic burden and diminished HRQoL was found among a relatively younger cohort in a resource-limited setting, even after adjustment for important confounding variables. Clinicians should be cognizant of the cumulative impact of anticholinergic burden on HRQoL outcomes and strive to minimise anticholinergic burden, particularly in patients taking multiple medications.

Views on the development and use of a new digital adverse drug event reporting platform in Australia: A qualitative study

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Introduction: Spontaneous reporting of adverse drug events (ADEs) to regulatory authorities is important for medicine safety surveillance but reporting rates are low, particularly among consumers/patients.

Objective: This study aimed to explore stakeholders' views on the development and use of a digital reporting platform to improve ADE reporting by consumers/patients to the regulatory authority in Australia, i.e. the Therapeutic Goods Administration.

Method: A qualitative study was conducted using semi-structured interviews, focus group discussions (FGDs), and co-design workshops with relevant stakeholders comprising of medicine consumers, healthcare professionals, and regulators in Australia. The audio and/or video-recorded interview data were transcribed verbatim, manually checked for accuracy, coded, and analysed thematically. Findings of the FGDs and co-design workshops were incorporated to enhance and complement the insights gathered from the interviews. Finally, the authors mapped the arising themes to the Capability, Opportunity, Motivation, Behaviour (COM-B) model, a frequently employed framework for recognising and addressing behaviours.

Results: A total of 39 participants took part in individual interviews (n = 22), two FGDs (n = 21), and/or three co-design workshops (n = 24). Half of the participants were consumers (54%), and the remainder were HCPs (41% - ten pharmacists, four doctors, and two nurses), and regulators (5%). Views related to ADE reporting in general, as well as specifically to a new digital platform, were uncovered. In analysing ADE reporting in general, several prominent themes emerged: Capability-related ones, encompassing aspects such as difficulty recognising ADEs and health literacy and awareness about reporting ADEs; Opportunity-related elements, focused on increasing visibility of ADE reporting, healthcare professional's views on consumer ADE reporting, validation, and patient education; and Motivation-related aspects, encompassing the common good, benefit to the reporter, identifying ADEs worth reporting, and concern about reporting. Furthermore, within the context of the development of a new digital platform, additional themes emerged: Capability-related dimensions, including eyesight; Opportunity-related considerations, incorporating features that facilitate intuitive use, convenience and accessibility, user experience, and trust; and Motivation-related ones, such as feedback loop.

Conclusion: The uncovered views are useful for improving the spontaneous reporting of ADEs by consumers/patients in Australia and provide guidance in the development of a digital platform and its implementation and evaluation.

Co-designing a consumer-focused digital reporting health platform to improve adverse drug event detection, management and reporting: Protocol for a multi-method research project (the ReMedi project)

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Introduction: Adverse drug events (ADEs) are unintended effects that occur following administration of a medicine. Early detection and management of ADEs in individuals are crucial in preventing further harm. Yet, up to 70% of ADEs are not reported to, and hence remain undetected by, healthcare professionals, and only 6% of ADEs are reported to regulators. Reporting by consumers, healthcare professionals, and pharmaceutical companies to medicine regulatory authorities of more of the ADEs that occur is needed to increase the safety of medicines.

Objective: This study aims to co-design a digital reporting platform to improve the detection and management of ADEs by consumers and healthcare professionals and the way they are reported to regulators.

Method: The project is being conducted in three phases over four years and employs a co-design methodology that prioritises equity by designing with stakeholders. This project is guided by the Consolidated Framework for Implementation Research (CFIR). In Phase 1, the authors engaged with three Australian stakeholder groups: consumers, healthcare professionals and regulators to define digital platform development standards. the authors conducted a series of individual interviews, focus group discussions, and co-design workshops with the stakeholder groups. In Phase 2, the authors will work with a software developer and user interaction design experts to prototype, test and develop the digital reporting platform based on findings from Phase 1. In Phase 3, the authors will implement and trial the digital reporting platform in South Australia through general practices and pharmacies. Consumers who have recently started using medicines new to them will be recruited to use the platform to report any apparent, suspected or possible ADEs since starting the new medicine. Process and outcome evaluations will be conducted to assess implementation and determine whether the new platform has increased ADE detection and reporting.

Results: This project is currently underway, and the authors will publish the findings of each phase. the authors have recently completed data collection for Phase 1, where the authors conducted 22 interviews, two focus group discussions, and three workshops involving 39 participants across the three stakeholder groups. The qualitative data gathered during this phase will play a crucial role in shaping the development and refinement of this platform in Phase 2 and the implementation and evaluation in Phase 3.

Conclusion: This project adopts a co-design methodology to develop a new digital reporting platform for ADE detection and reporting, considering stakeholders' perspectives and lived experience and addressing their requirements throughout the process. The overarching goal of the project is to leverage the potential of both consumers and technology, to address the existing challenges of under-detection and under-reporting of ADEs to healthcare professionals and regulators. The project potentially will improve individual patient safety and generate new data on ADEs for regulatory purposes related to medicine safety and effectiveness.

Weaving indigenous perspectives into pharmacy practice in Canada

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Introduction: The Indigenous Pharmacy Professionals of Canada (IPPC) is an association established in 2022 to represent and empower First Nations, Métis, and Inuit (Indigenous) pharmacy professionals in Canada. This organisation leads the weaving of Indigenous perspectives into Canada's pharmacy practice sector and offers a safe community for Indigenous pharmacy professionals. The colonisation of Canada resulted in significant systemic harms on the Indigenous Peoples, including cumulative and ongoing inequities in social determinants of health and health outcomes. The Truth and Reconciliation Commission of

Canada detailed the mechanisms of systemic atrocities, highlighting genocidal practices committed within colonial institutions (i.e., residential schools). This report included Indigenous-led Calls to Action for Indigenous rights and freedoms and systemic change to resolve the health and social inequities of Indigenous Peoples. These Calls included representation of Indigenous healthcare providers and Indigenous history and cultural competency training for healthcare professionals. The United Nations Declaration of the Rights of Indigenous Peoples further details the autonomy and Indigenous leadership required in health sectors. IPPC tasked itself with strategically defining its purpose in bridging these Calls to Action, addressing Indigenous health inequity caused by pharmacy systems, and supporting thriving Indigenous communities.

Method: The organisation's board of directors, twelve Indigenous pharmacy professionals with diverse Indigenous ancestries, completed a formal strategic planning gathering. The organisation then scheduled meetings or consultations with over 75 key partners in pharmacy practice and Indigenous health to guide the strategic direction of the association. IPPC provided educational offerings to vast stakeholders within the pharmacy practice and gathered feedback from the sessions provided.

Results: Indigenous Peoples in Canada face inequities in health outcomes, health access, and distinctions-based integration of their own health values. The Canadian pharmacy sector contributes to Indigenous health inequity in a variety of systemic mechanisms, including access barriers, anti-Indigenous racism, and harming holistic and Indigenous-defined determinants of health. Key partners in pharmacy are largely unaware of these harms, uneducated or undereducated in Indigenous history and values, and unprepared to coordinate systemic change. Indigenous pharmacy professionals are few and often experience prejudice and access barriers to education and employment in the sector.

Conclusion: The Canadian pharmacy sector contributes to Indigenous health inequity, including access barriers, anti-Indigenous racism, and the inability to support traditional practices and Indigenous health values. To meet the Indigenous-determined health equity and empowerment needs of Indigenous Peoples in Canada, an "Indigenous Health Equity in Pharmacy Action Plan" is required to coordinate the many stakeholders involved. Indigenous pharmacy professionals must be represented and empowered to lead the work in the sector, including in collaboration with Indigenous Peoples, traditional and holistic health strategies.

Inventory management in public pharmacies - mix method categorisation

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Introduction: With the increasing volume of products in public pharmacies, there is a growing need for quality inventory management, both to prevent shortages of medicines and medical devices (medical products) that are most needed by patients and to control the uncontrolled increase in the value of stocks. Inventory management should categorise medical products in a way that the pharmacy has strict control over the category of medical products that patients most commonly require, as well as over the category of other products from which the pharmacy generates the most revenue and profit.

Objective: Accordingly, the following objectives were defined: the classification of inventory into ABC (always, better, control), ABCm (modified ABC), and FSN (fast, slow and non-moving) classes; analysis of inventory based on ABC, ABCm, and FSN classification; creation of ABC-FSN and ABC-ABCm matrices and analysis of inventory turnover coefficients in 2022 by ABC classification.

Method: This retrospective descriptive study was conducted from July to September 2023, based on data for over 10,000 products from the Pharmacy chain "Dr. Golic", consisting of 6 pharmacies in the Banja Luka region (Bosnia and Herzegovina). All marketed products in 2022 were grouped into ABC, ABCm, and FSN classes and, at the same time, grouped into two large categories (medical and other products). ABC classes were based on annual consumption value, ABCm classes on annual profit values, and FSN classes on consumption rate. Medical product categorisation (according to monitoring needs) was performed by combining ABC and FSN classes into categories I^m, II^m, and III^m. Other products were categorised into categories I^d, II^d, and III^d by combining ABC and ABCm classes. Inventory turnover coefficients and days of binding were calculated for all stocks and specifically for classes A, B, and C.

Results: Only 10% of products (class A) account for 70% of the pharmacy chain budget, and 339 products (classes F and S) were dispensed daily, which constituted 29% of the total procurement value of all products. A total of 1009 products (class Am) contributed to 70% of the profit in the Pharmacy chain. Category I^m of medical products, derived from the ABC and FSN matrix, included 149 medical products, while category I^d (derived from ABC and ABCm matrix) comprised

580 other products requiring the strictest continuous monitoring. The inventory turnover coefficient in 2022 was 4.64 and significantly varied among classes A, B, and C.

Conclusion: Achieving optimal stock quantities in public pharmacies requires complex mix method inventory management to maintain ethics in pharmacy and ensure economic viability for the pharmacy.

The consumption of psychotropic drugs in the republic of SRPSKA and COVID-19 pandemic – is there an influence?

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Introduction: The new pandemic caused by the coronavirus has significantly affected the health of a large number of people around the world and has led to numerous consequences, both in terms of physical and mental health. Many patients still feel long-term consequences, such as fatigue, dyspnea, anxiety, insomnia, muscle weakness etc. Because of that, the use of psychotropic drugs increased during and after the pandemic in numerous countries.

Objective: The aim of this study is to conduct an observational analysis of the outpatient consumption of drugs used to treat depression, anxiety and other mental disorders in the Republic of Srpska before and after the COVID-19 pandemic, i.e. during the period from 2017 to 2022.

Method: Data were obtained from the Public Health Institute and were expressed as defined daily doses/1000 inhabitants/day (DID). Descriptive statistics were used for data processing.

Results: Psycholeptics (N05) and psychoanalytic (N06) are the most used drugs that act on the nervous system, with a continuously increasing trend of consumption during the observed period (from 49.1 to 69.4 DID - ↑41.3%). Anxiolytics (N05B) and antidepressants (N06A) were the most commonly used, of which benzodiazepine derivatives, N05BA (27.2 DDD, on average during the observed period) and selective serotonin reuptake inhibitors, N06AB (16.1 DDD, on average during the observed period) were the most used. If we compare the trend of increase in consumption from 2017 to 2019 (group 1 - before the onset of the pandemic) in relation to the increase in consumption from 2019 to 2022 (group 2 - after the onset of the pandemic), the results indicate a greater increase trend in consumption of analysed drugs after the onset of the pandemic. In the first group, the consumption of anxiolytics increased by 7.3%, while in the second group, the increase was 18.4%. The situation is similar with selective serotonin reuptake inhibitors, where before the onset of the pandemic, the increase was 17.4%, and after the onset, it was 23.8%, still smaller than among anxiolytics. From the group of anxiolytics, bromazepam is the most consumed (14.5 DID, on average), which makes up to 33% of the total consumption of these two groups of drugs together. Furthermore, the consumption of diazepam (9.9 DID) is significant, while alprazolam (9.4 DID) and lorazepam (3.3 DID) are in third and sixth place, respectively, in terms of consumption. Together, the consumption of all benzodiazepine derivatives, i.e. anxiolytics, accounts for 63% of the consumption of these drugs. From the group of antidepressants, sertraline, paroxetine, escitalopram and fluoxetine (selective serotonin reuptake inhibitors) were used the most, with an average of 7.9 DID, 3.6 DID, 3.3 DID and 1.4 DID, respectively.

Conclusion: A significant increase in the consumption of anxiolytics and antidepressants is evident during the observed period, especially after the onset of the pandemic, which is expected. However, it is necessary to carry out further pharmacoepidemiological analysis, with the aim of evaluating the effectiveness of therapy, rationalising prescribing practice and reducing side effects of these drugs.

Construction of the logical framework of the State Pharmaceutical Assistance Policy in the state of Rio Grande Do Sul

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Introduction: The National Medicines Policy, as part of the National Health Policy, constitutes one of the fundamental elements for the effective implementation of actions capable of promoting the improvement of the population's health care conditions.

Objective: Develop subsidies to collaborate with the process of building the Pharmaceutical Assistance Policy in the State of Rio Grande do Sul. The specific objectives are to carry out a review of the process of building and implementing the Pharmaceutical Assistance Policy in other states in Brazil.

Method: This is a cross-sectional and descriptive study carried out in the pharmaceutical assistance sector of Brazilian States from July to August 2021. Initially, a survey was carried out on the pages of the health departments of each State and Federal District to verify the existence of consolidated Pharmaceutical Assistance policies. Afterwards, secondary data on pharmaceutical assistance in Brazilian states were analysed, which are included in a management

report made available by the Department of Pharmaceutical Assistance of the State Department of Health. The research was carried out in the months of September and October 2021.

Results: In an initial search on the websites of Brazilian State Governments, it was found that only one presented document related to the construction of pharmaceutical assistance policy, with documents relating to the States of São Paulo, Bahia, Pernambuco, Mato Grosso and Minas Gerais being found. Of the data made available by the Department of Pharmaceutical Assistance, only four Pharmaceutical Assistance coordinators (Bahia, Goiás, Pará and São Paulo) reported that the policy was already structured.

Conclusion: Almost twenty years after the publication of the National Pharmaceutical Assistance Policy, the implementation of state policies is still not a reality in Brazil and, even those states that have some policy implemented, report difficulty in putting into practice actions related to structuring policy, either due to a lack of understanding of the indicators or a lack of support from the central level.

Telepharmaceutical care service as an alternative to evaluate the effectiveness of the treatment provided by the Brazilian Ministry of Health (DAF/SECTICS/MS)

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Introduction: Pharmaceutical care is an approach that aims to ensure the safety and effectiveness of drug therapy, promoting the health and well-being of patients. Pharmaceutical care is a key concept that refers to a patient-centred care model that seeks to promote the rational use of medicines, prevent and solve medicine-related problems, and promote the health and well-being of patients. According to the World Health Organisation (WHO), pharmaceutical care is defined as "the responsible provision of care related to the use of medicines, with the aim of achieving defined therapeutic outcomes that improve the quality of life of patients". In Brazil, law No. 14,510, of December 27, 2022, authorises teleservice practices for all health professions, with federal councils being responsible for oversight and ethical standardisation. Telehealth is defined as the provision of services at a distance, using information and communication technologies, secure transmission of data and information, through texts, sounds, images, or others. The Department of Pharmaceutical Assistance and Strategic Inputs (DAF/SECTICS/MS) has a priority goal of implementing Pharmaceutical Care at the national level. Within the goals stipulated in the pharmaceutical care implementation project is the implementation of a remote pharmaceutical care service to monitor the use of medications available in the SUS.

Objective: The aim of this work is to report how the telepharmaceutical care service was developed.

Method: The service modelling method chosen was FISpH: Framework for the Implementation of Services in Pharmacy. The FISpH method (Framework for the Implementation of Services in Pharmacy) is a conceptual model that provides a structured approach to implementing pharmaceutical services. It was developed to assist pharmacists in planning, implementing, and evaluating clinical services in pharmacies. The stages of the FISpH method include the following: Identification of Needs and Opportunities; Strategic Planning; Development of Protocols and Procedures; Training and Capacity Building; Service Implementation; Continuous Monitoring and Evaluation; Improvement and Expansion.

Results: Currently, the authors have already prioritised the clinical conditions to be applied in this care model remotely, the authors have gathered and studied the clinical protocols for each of them, the authors have structured the service flows and consultation stages, the authors have trained the team, and the authors are considering strategies for recording assistance to begin the pilot stage of the project.

Conclusion: The telepharmaceutical care service consists of a remote consultation carried out by a pharmacist in which it is possible to evaluate possible problems related to pharmacotherapy with the objective of optimising the process of medicine use, increasing adherence to treatment, and improving effectiveness and safety in the use of medicines. Testing the viability of new services is essential for research and the use of new technologies to optimise the population's access to new treatments. The authors are currently experiencing a digital transformation, and health is a strategic area of development in this context. In this way, telepharmacy is part of this logic of subordinated digital transformation and is guided by a comprehensive vision of health care.

Construction process of the National Pharmaceutical Care Guidelines (DNCF) of the Department of Pharmaceutical Assistance and Strategic Inputs of the Brazilian Ministry of Health (DAF/SECTICS/MS)

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Introduction: Pharmaceutical assistance has a comprehensive vision that ranges from research and production of medicines but has an essential focus on its inclusion in a care strategy within the scope of the public health system. Pharmaceutical care, as a professional practice model, aims to ensure the improvement of health outcomes through interaction with the user, family, and community. The practice philosophy is based on a humanised approach, identifying the health needs of all involved and proposing effective pharmaceutical interventions integrated with the multidisciplinary team. In terms of practice management, implementing pharmaceutical care requires guidelines that facilitate the planning and development of care activities. The Guidelines aim to disseminate targeted national-level information about Pharmaceutical Care services, guiding and sensitising managers and professionals working in the Unified Health System (SUS).

Method: The Department of Pharmaceutical Assistance and Strategic Inputs (DAF/SECTICS/MS) established the Pharmaceutical Care Nucleus (NCF) in collaboration with technical areas of the Brazilian Ministry of Health, representatives of state and municipal health departments, and the Subgroup of the Pharmaceutical Care Subgroup in the Science and Technology Working Group of the Tripartite Intermanagers Commission (CIT). The construction of DNCF involved several phases: 1) Survey and analysis of local regulations on pharmaceutical assistance; 2) Review and analysis of MS projects, regulations, and publications from the Federal Pharmacy Council (CFF); 3) Workshop with State Pharmaceutical Assistance Managers for local needs assessment; 4) 1st National Meeting of Pharmaceutical Assistance Managers; 5) Study of technical-scientific articles on improving pharmaceutical clinical services; 6) Development of guidelines for implementing pharmaceutical care services based on workshop outcomes and NCF analysis; 7) Validation and agreement among federated entities managing SUS.

Results: The final guideline document consists of 12 guiding points for the implementation of pharmaceutical care. The guidelines bring aspects related to the necessary structure for clinical services, as well as questions related to the modelling of services and the importance of institutionalising services. It also brings the concept of pharmaceutical care and pharmaceutical services, bringing the possibility of services being offered remotely.

Conclusion: The creation of the DNCF under DAF/SECTICS/MS enables discussion, coordination, guidance, and proposal of relevant pharmaceutical care actions for managers, professionals, and users across SUS care levels, ensuring quality services considering local territory needs. Guiding actions related to care ensures that the quality of services delivered to the population meets minimum quality standards and guarantees access to treatment, but also guarantees care.

Telehealth: Pharmacist-provided services and outcomes in the United States

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Introduction: The use of telehealth has been accelerated by recent advancements in technology and the COVID-19 pandemic. This innovative approach involving pharmacists providing virtual health visits has slowly gained traction over time. However, the pandemic placed a demand on its use. This sudden transition resulted in a lack of readiness tools and training for healthcare professionals. In response, a team of researchers conducted a scoping review to explore the readiness of pharmacists to provide telehealth services.

Objective: The focus was to identify and analyse available and published literature on telehealth services and outcomes including humanistic, economic, and clinical impact.

Method: During March 2023, a thorough literature search was done using various search engines and key terms, resulting in the comparison of peer-reviewed articles. Search terms included telehealth, telemedicine, COVID-19, insurance, virtual medicine, and remote monitoring. Search engines used included PubMed, Google Scholar, Medscape, and the National Library of Medicine. All the articles were reviewed for their relevance to this period and the effectiveness of telehealth use. While searching for articles, the focus was placed on information showing how pharmacists have used telehealth to care for patients. The success statistics and areas for improvement were analysed to help develop this tool. Barriers to utilising telehealth services were also assessed to understand patient and healthcare professionals' needs. The data collected was then separated into humanistic, clinical, and economic categories.

Results: The articles showed improvement in clinical outcomes and economic benefits. They also explored how third-party payors are covering costs associated with

telemedicine. Telehealth has also been shown to offer humanistic benefits, such as improving health disparities and increasing accessibility to care for patients with disabilities and underserved communities. The Health Resources and Services Administration (HRSA) has also reported improvement in coordinating care due to the advancement of technology and its role. This study revealed the benefits of reducing the amount of in-person visits other than when labs and other tests need to be collected. A limitation that surfaced during the article reviews was access to a strong, stable, and secure internet connection for the patients. Although the study reveals the benefit of telehealth, those in more rural settings may not have been included in the data due to accessibility constraints. This, however, does not affect the efficacy of the Pharmacists' utilisation of telehealth. Overall, patients have benefited from using telehealth for continuous monitoring of chronic diseases while reducing inpatient visits.

Conclusion: The currently available literature reveals that telehealth services offered by pharmacists are a positive addition to the healthcare system in managing chronic conditions, providing alternative access to treatment, and improving patient health outcomes. Not only does it reduce the transportation barrier, but it also allows for scheduling flexibility. The utilisation of telehealth and its acceptance and evolution is now a part of the healthcare infrastructure. The economic, clinical, and humanistic benefits have shown to improve patient results. This transformative tool in modern healthcare is allowing pharmacists to increase their clinical intervention reach.

Bite-sized educational resources and a virtual community of practice to engage pharmacy professionals and students in quality improvement

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Introduction: Bite-sized educational content (e.g., infographics, podcasts, video microlessons) about quality improvement (QI) can be shared online and tailored to diverse learning styles of healthcare professionals (HCPs) and students. A virtual community of practice (CoP) facilitates knowledge exchange/translation of QI initiatives among HCPs/students.

Objective: This study aimed 1) to develop and evaluate educational resources for HCPs about QI concepts using infographics (Online Pocket Guide to QI; PGQI), video microlessons, and provide real-world examples of QI/leadership (Leading with Quality Podcast; LQP); 2) to engage HCPs/students by featuring the content in a virtual QI CoP.

Method: The development of educational resources involved consulting national/international resources for training HCPs on QI (PGQI, video microlessons) and interviewing guest speakers (e.g., faculty members, clinical directors) about their experiences with QI/leadership (LQP). Resources were featured on a QI CoP for pharmacists hosted on QID. The PGQI and LQP were individually pilot-tested to a convenience sample of Canadian pharmacy professionals/students through online surveys based on Kirkpatrick's four-level training evaluation. The authors asked about perceived value, relevance, and knowledge gain after reviewing the PGQI or LQP.

Results: The PGQI, video microlessons, LQP and QI CoP have been developed. Survey respondents for both PGQI (n = 20) and LQP (n = 20) found the materials to be relevant and easy to understand, indicated improved knowledge of QI and/or leadership, and recommended the resources to other HCPs/students. PGQI respondents suggested more external resources, QI examples, and case scenarios, while LQP respondents suggested improving clarity by explaining concepts and jargon at the beginning of the episode and dividing some episodes into two sessions for greater elaboration of the subject matter.

Conclusion: This bite-sized content (PGQI and LQP) will serve as resources to support a virtual QI CoP for HCPs/students for knowledge exchange, personal and professional development, and fostering HCP/student leadership in QI. Continuing professional development (CPD) curriculum developers may consider adopting microlearning or bite-sized educational content to accommodate the current learning environment where HCPs/students are often overwhelmed by digital information from social media and/or the internet. Microlearning provides learners with spaced learning of small chunks of new/refreshed content, enhancing overall knowledge retention.

The overview of orphan drug utilisation in Taiwan in 2022

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Introduction: The analysis of the orphan drug utilisation is very important for clinicians and rare disease patients. This research analysed the utilisation of orphan drug in Taiwan to provide government the reference for importing medications, physicians for prescribing medications, pharmacists for providing medications.

Method: To allow all rare disease patients to obtain medication smoothly, the government has created several regulations related to orphan drug management, such as The Rare Disease and Orphan Drug Act, to support the whole administration's needs. For those orphan drugs that have already obtained license approval, the PSUR (Periodic Safety Update Reports) needs to be provided to TFDA every year. For those orphan drugs that are without license approval but with special import permits, the hospitals need to provide the utilisation evaluation report to MoHW.

Results: In 2022, the hospitals reported total 115 orphan drugs in utilisation. There are 18 orphan drugs with special import permit and used by 253 patients. In 2022, there are 208 utilisation evaluation reports collected, and the recovery rate is 82.2%. Studying those reports, the adverse events happened in 11 patients (incident rate: 5.3%). Those events include dizziness, diarrhoea, Injection site reaction, hypertrichosis, Abnormal gait etc.

Conclusion: The efficacy and safety of orphan drugs has been closely monitored in Taiwan. The monitor and management have kicked off since granting Orphan-Drug Designation, pre-license management, post marketing risk management to efficacy and safety re-evaluation.

Relation of poverty with treatment seeking behaviour and antibiotic misuse among UTI patients

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Introduction: Antibiotic discovery was a breakthrough in fighting against infectious diseases. However, the increasing resistance globally poses a major threat to public health and makes infectious diseases hard to treat. Poverty may be a possible driver for antibiotic misuse.

Objective: The current study aimed to assess the relationship of multi-dimensional poverty with treatment-seeking behaviour and antibiotic misuse among urinary tract infection (UTI) patients.

Method: A cross-sectional approach was utilised to recruit patients from two provinces of Pakistan who had a history of UTI in the previous month. The treatment-seeking behaviour and antibiotic misuse data were collected on a self-developed questionnaire, whereas the poverty data was collected on a modified multi-dimension poverty index (MPI). Descriptive statistics was applied to summarise the data. The logistic regression analysis was carried out to assess the association of multi-dimension poverty with patient treatment-seeking behaviour and antibiotic misuse.

Results: A total of 461 participants who had UTI symptoms in the previous month were recruited. Most of the participants in the severely deprived stage were treated with UTI ($p < 0.001$). However, there was a high proportion of the participants who consulted with friends and family for UTI treatment ($p < 0.001$). The patients in the deprivation status (deprived and severely deprived) were less associated with formal consultation. The poorer subgroups were less likely to practice antibiotic course completion.

Conclusion: The current study highlighted that poverty has an important role in antibiotic misuse. Poorer subgroups were associated with informal consultations and incompletion of the antibiotic course. Further studies are needed to explore the potential role of poverty in treatment-seeking behaviour and antibiotic misuse.

How can community pharmacy support sleep management in people living with dementia and mild cognitive impairment (NIHR-TIMES study)?

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Introduction: Sleep disturbance is a key issue for people living with dementia and their family carers. Medication is often used to treat sleep problems. However, the medication often has numerous side effects and can worsen the symptoms of dementia. Non-medication approaches may offer a safer, more effective approach. The NIHR-funded TIMES study (NIHR [National Institute for Health Research] Reference: 202345) is currently developing and testing a decision support tool to optimise the management of sleep (TIMES) for people living with dementia or mild cognitive impairment (MCI) and sleep disturbance. This study reports implications for community pharmacy from an initial Realist Review.

Objective: To use a realist review to understand the possible role of community pharmacy in the management of sleep problems in people living with dementia.

Method: The first phase of TIMES used a realist methodology that combined secondary data with stakeholder engagement (patient, family carers, practitioners, and pharmacy staff). Using realist approaches, a programme theory for sleep management for people living with dementia and mild cognitive impairment was developed, refined and tested. Reporting guidelines for realist research (RAMESES) were followed.

Results: The review included 71 discrete documents for analysis; this generated 19 context-mechanism-outcome configurations (CMOCs). The management of sleep problems needs to be tailored to the needs of people living with dementia and MCI and any family carers.

Sleeping tablets were commonly used, including long-term, suggesting a potential target for community pharmacy and practice-based pharmacy medication review. The pressure to prescribe was particularly prevalent in care homes, indicating a more refined target for intervention.

With the possible use of alternative and over-the-counter remedies, advice on these treatments and assessment of sleep disorders is a possible key role for community pharmacy staff, potentially including counter assistants. However, overall assessment was found to be challenging; it is likely to be particularly challenging in community pharmacies when assessment is often via proxy (e.g., family carers). A key finding from the TIMES realist review was, despite the potential role of community pharmacy, the lack of literature in this area. One further role that potentially needs investigation is the potential for community pharmacies to highlight the availability of other resources.

Conclusion: There is a need to tailor the management of sleeping problems in people living with dementia. Key areas include the use of hypnotics, complementary treatments and assessment. Community pharmacies, in particular, could play a key role partly related to their accessibility, but data is generally lacking. Further research is required.

South African pharmacy personnel are more willing to accept COVID-19 vaccines than the general population, but vaccine hesitancy is an obstacle

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Introduction: Vaccine hesitancy poses a significant challenge to achieving and maintaining high vaccination coverage despite overwhelming evidence of the benefits of vaccines. Although the COVID-19 pandemic increased public awareness of the importance of vaccines, it has also fuelled vaccine hesitancy. Pharmacies are integral to offering vaccination services and advice because of their accessibility and because pharmacists are considered to be trusted sources of health information. However, evidence has shown that healthcare workers are not immune to vaccine hesitancy, resulting in low vaccination coverage of themselves and their clients. South African (SA) data on COVID-19 vaccination uptake by pharmacy personnel and vaccination-related advice given to clients are lacking.

Objective: To investigate COVID-19 vaccination uptake amongst pharmacy personnel in SA and investigate predictors of vaccination behaviour and willingness to advise others to vaccinate against COVID-19.

Method: Cross-sectional study among pharmacy personnel registered with the SA Pharmacy Council. An email invitation included a link to an online survey on SurveyMonkey® (02/12/2022 to 28/01/2023). Collected data included demographics, COVID-19 vaccination status, willingness to advise others on COVID-19 vaccination and vaccine hesitancy using a Likert scale-based 16-item adaption of the 5C antecedents of vaccination behaviour scale. Raw data were downloaded from SurveyMonkey® to Microsoft Excel®. 5C statements were scored as follows, except for one 'Collective responsibility' item, which was reversed scored: 1 = strongly disagree; 2 = moderately disagree; 3 = slightly disagree; 4 = neutral; 5 = slightly agree; 6 = moderately agree; 7 = strongly agree. Epi Info™ was used for descriptive and inferential statistical analysis. Mean 5C scores, stratified by vaccination status and vaccination advice, were compared with the independent t-test (statistically significant: $p < 0.05$). Ethical clearance was obtained, and respondents provided informed consent.

Results: In total, 2245 pharmacy personnel responded to the survey: pharmacists (47.8%); females (68.1%); African (51.8%), permanently employed (68.8%); community pharmacy practice (54.7%). Overall, 74.3% (1668/2245) of respondents received ≥ 1 COVID-19 vaccine dose/s. Two-thirds (69.0%; 1459/2113) indicated willingness to provide COVID-19 vaccination advice, of whom 88.9% had received ≥ 1 COVID-19 vaccine dose. Half (51.8%; 339/654) of those who were not willing to provide vaccination advice (654/2113), had not been vaccinated themselves. The 5C scale analyses revealed that (a) all items of the 'Confidence' and 'Collective responsibility' constructs were statistically significant predictors of positive vaccination practices and willingness to advise others to vaccinate against COVID-19; (b) all items of the 'Complacency' and 'Calculation' and three of the 'Constraints' constructs predicted negative vaccination practices and unwillingness to advise others to vaccinate against COVID-19. Finally, one item of the 'Constraints' construct was not a predictor of vaccination behaviour.

Conclusion: Uptake of COVID-19 vaccination (74.3%) amongst pharmacy personnel was higher than uptake in the

general adult population (44.9%). In the context of COVID-19 vaccination, the adapted 5C scale appeared to be a useful tool to predict vaccination behaviour and advise others, except for one item which requires further refinement. Of concern is that 31.0% of respondents are not willing to provide vaccination advice, indicating the need for targeted behavioural interventions. Data from the 5C scale can be used to further adapt and validate a vaccine hesitancy scale for SA.

Strengthening regional collaboration within pharmacy, and with the World Health Organisation

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Introduction: The establishment of independent Regional Pharmaceutical Forums (Forums) based on the World Health Organisation (WHO) regional structure commenced in 1992. One objective of the Forums included the facilitation of collaboration between national pharmacy associations and with the WHO office in the respective regions. The five extant Forums became part of the International Pharmaceutical Federation (FIP) in 2024. This presentation describes the evolution, purpose and structure of the Regional Pharmaceutical Forums.

Method: Thematic analysis of survey data, annual reports, meeting records, and published literature.

Results: The historic Forums had different governance structures and resource capacities and variously faced political, cultural and linguistic hurdles. They had intermittent and mixed engagement with the respective WHO regional offices and with FIP member organisations. In spite of these challenges, notable achievements by the Forums included regional conferences, leadership summits, training programs, and research projects.

While the WHO geographic structure cuts across economic, linguistic, and cultural affiliations that have historically been used as a basis for international collaboration, it still provides the pharmacy profession with the most logical basis on which to foster regional collaboration. FIP initiated coordinated support to the Forums in 2013, and full integration will provide each Forum with a resource base and ensure greater standardisation and cohesion between the Forums. It will also provide a structure that enables FIP to act regionally in its three key areas of pharmacy practice, pharmaceutical sciences, and pharmacy education and workforce, and to collaborate with the WHO.

Conclusion: Addressing the challenges of the historic Forums, formalising relations with WHO regional offices, and supporting the three key areas of FIP regionally will contribute to the success of the integrated Forums and the advancement of the profession on a regional basis.

The evolution of a competency framework for a developing country: From regional needs assessment to national development

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Introduction: Competency standards are a series of statements that describe individual practitioners' skills, attitudes and attributes based on knowledge and experience sufficient to enable them to practise as pharmacists. The need to develop competency standards for pharmacists was identified as the highest regional priority at a summit of leaders of national pharmacy associations from the Western Pacific Pharmaceutical Forum (WPPF) in 2016. Stimulated by this resolution, the aim of this work was to develop and implement a comprehensive competency framework for pharmacists in accordance with international evidence and standards in Mongolia, a developing country experiencing significant growth in the pharmacy sector.

Method: Pharmacist competency statements that exist in countries of the Western Pacific Region were collated and their structure and content mapped with the International Pharmaceutical Federation (FIP) Global Competency Framework (GbCF). The regional statements and the GbCF, an in-country workshop and training materials provided by WPPF, and source documents from Australia, the Philippines, Ireland and Thailand were applied by a working group endorsed by the Mongolian Minister of Health to develop a National Competency Framework for Mongolian Pharmaceutical Professionals (NCFMPP).

Results: The NCFMPP consists of six core competencies and twenty-five performance criteria, each supported by

evidence. Core competencies address (i) legal, ethical & professional practice, (ii) client-centred care, (iii) leadership & management, (iv) effective communication, (v) inter-professional collaboration, and (vi) continuous professional development. Further competencies, elements and performance criteria are provided for five areas of practice (academic & research, medicines regulation, pharmaceutical production, pharmaceutical care and management, and pharmaceutical public health).

Conclusion: The combination of regional and bi-lateral collaboration research and commitment from both the national professional association and government supported the development of a comprehensive country-specific national competency framework which will support the education, professional development and practice of pharmacists in Mongolia. Notable features not existing in the GbCF were incorporated into the national framework to address local needs.

Alarming trends in Sri Lanka: The Sri Lankan case of pharmaceutical governance and accountability

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Introduction: The supply of Pharmaceuticals in developing countries often presents social and political dilemmas as unplanned and poorly implemented policies and processes can worsen inequities in access and health outcomes. Billions of dollars are lost globally because of theft, bribery, and extortion, significantly distorting healthcare access and equity. Even though the World Health Organisation advocates for the adoption of stringent anti-corruption policies and mechanisms within the health systems of its member nations, these initiatives appear to have faltered when implemented at national levels. In the case of Sri Lanka, patient deaths and shortages of lifesaving medicines have challenged the credibility of procurement, with corruption within the public sector a major concern. In an import-driven economy, the high market value of imported drugs provides incentives for malfeasance. The World Health Organisation reports that 2/3 of hospital medicines are lost to fraud in some countries. Research from Sri Lanka indicates over 90% of Sri Lankans see the health sector as deeply corrupt.

Objective: Beyond these socio-political debates, there has been limited research to understand how the governance and accountability mechanisms can be better legitimated and institutionalised to sustain good pharmaceutical supply practices. This study investigates how pharmaceutical procurement and supply chain management in Sri Lanka intersects with governance and accountability mechanisms to improve efficiency, certainty, and safety of supply.

Method: This study will collect data following a qualitative case study approach, including reviews of historical and contemporary archives and unstructured and semi-structured interviews with decision-makers across the supply chain. The collected data will serve as a foundation for constructing a comprehensive understanding of the issues and corresponding actions observed across the spectrum of decision-making processes to the operational implementation within the pharmaceutical supply network.

Results: The findings will contribute to the ongoing discussion on the establishment and legitimisation of good governance and accountability dynamics within pharmaceutical supply chains in developing nations. The analysis will facilitate comprehending how practices deviate from current national policies and identify divergences compared to the best practices recommended by the World Health Organisation's Good Governance for Medicine Framework.

Conclusion: This comprehensive case study focusing on Sri Lanka seeks to offer valuable insights to policymakers and stakeholders committed to combatting corruption within the public health sectors of similar developing nations. It aims to enhance public health outcomes and advance social equity on a broader scale by supporting evidence-based practices to promote transparency, accountability, and effective governance within pharmaceutical supply chains.

Treatment costs of novel medicines and the relative importance of biologic status to treatment costs – Retrospective register study in Finland in 2011–2021

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Introduction: Costs of outpatient care medicines have strongly increased over the past decades. New, more expensive medicines entering the market are seen as one of the main reasons for this. One major trend in pharmaceutical development has been the transition to biologic medicines rather than traditional small molecule medicines. In 2022, seven out of ten medicines for which the most reimbursements in Finland were paid were biologic medicines.

Objective: This study examines new active substances and their treatment costs at the time of inclusion in the reimbursement scheme in Finland between 2011 and 2021. Furthermore, the treatment costs of biological medicines compared to other medicines are examined.

Method: The authors identified new reimbursable medicines and their six-month treatment costs at the time of entry into the reimbursement scheme from the nationwide register of medicine dispensations reimbursed under the National Health Insurance Scheme maintained by the Social Insurance Institution of Finland. All costs were converted to 2022 monetary value. Measures of statistical averages and distributions were used to describe new medicines and their first six-month treatment costs between 2011 and 2021. A linear regression model was used to examine the relative importance of biologic and non-biologic status for treatment costs.

Results: Between 2011 and 2021, a total of 193 new medicines were included in the public reimbursement scheme in Finland. Of these, 31 were biological medicines. One to six new biologic medicines were included in the reimbursement scheme each year, mainly during the latter years of the study period. Indications for new biological medicines were most often rheumatic diseases, blood diseases, diabetes and migraine. In 2011, the median cost of six months of treatment per patient was €1,209, compared to €10,652 in 2021. The median cost of biologic medicines for the entire period was €8,296, and the corresponding median cost of non-biologic medicines was €1,514. The cost of six months of treatment of new biologic medicines was 4.7 times higher ($p < 0.001$) than that of new non-biologic medicines.

Conclusion: Rising pharmaceutical costs are a challenge for healthcare systems. This study shows that new medicines approved for reimbursement in Finland were more expensive in 2021 than in 2011. Treatment costs of new biologic medicines were considerably higher at the time of inclusion in the reimbursement scheme than those of non-biologic medicines. The uptake of less expensive biologic medicines and the pharmacist-led substitution introduced in Finland in 2024 is expected to curb the increasing spending on biologic medicines. However, these measures can only take place once the exclusive sales period expires. Substantial spending will thus accrue during the exclusive sales period which can last up to 15 years. Attention should also be paid to the costs of new medicines entering the market and the era before the exclusive sales period expires.

Empowering tuberculosis patients in Pakistan: A randomised controlled trial of patient-centred care and short messaging interventions to improve treatment outcomes

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Introduction: According to the World Health Organisation (WHO), tuberculosis (TB) affects approximately one-third of the world's population every year. The WHO End TB strategy states that significant technological breakthroughs are needed to greatly accelerate the decline in TB incidences. Therefore, it is important to execute multi-sectorial strategies and prioritise the promotion of the most appropriate medical and planning innovations precisely in TB high-burden countries such as Pakistan. In this context, an innovative randomised controlled study was designed to develop and carry out locally applicable operational research in Pakistan.

Objective: This study aimed to evaluate how a pharmacist-led, patient-centred mobile daily reminder intervention could improve treatment outcomes, adherence, and the management of adverse drug events for patients with TB.

Method: This study was a parallel-designed (1:1), randomised, controlled, outcomes-blinded trial comprised of usual care and intervention care groups. The patients were randomised through a computer-generated list into the control group or the intervention group (patient-centred care along with SMS reminders led by a pharmacist). Due to the nature of the intervention, blinding to the group allocation could not be achieved for the recruiter. The review committee and treatment outcome data extractors who assessed the data were completely blinded to the assignment of study groups. The data used in this study was obtained from the Pakistan Institute of Medical Sciences and District Bannu TB control centres. The primary outcomes include treatment outcomes, adherence, and follow-up visits, while the secondary outcome focuses on the management of adverse drug events.

Results: The authors found that individual intervention affects the percentage point reduction in the likelihood of unsuccessful treatment outcomes. A successful treatment outcome was found in 93.4% of the patient-centered care group (PCC) as compared to 75.6% of the usual care group ($P < 0.001$). The chance of successful treatment outcomes was higher in the pharmacist intervention group (adjusted odds ratio (AOR), 3.14; 95% CI, 1.26-7.84). Medication adherence

was significantly better ($P < 0.001$) in the PCC group (94.6%) than in the usual care group (77.6%). Furthermore, the authors discovered significant variation in that the PCC group reported fewer pharmaceutical care issues and adverse events than the routine care group (47/241, 19.5% vs. 81/242, 33.4% $P < 0.001$).

Conclusion: The pharmacist-led patient-centred care, along with mobile reminder interventions, were acceptable and improved the treatment outcomes compared with the usual care. As an alternative, it gives the idea to be a modest, well-organised technique of TB management. The authors noticed that structured health counselling and clinical service intervention significantly improved medication adherence and management of adverse drug events, which ensured positive therapeutic outcomes in TB patients. This strategy is acceptable in Pakistan and could be considered in the future in TB high-burden countries with limited resource settings.

Pharmaceutical pricing policies in Bosnia and Herzegovina

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Introduction: The pricing of reimbursable medicines by Health Insurance Funds is regulated in most European countries. The most common pricing policy in European countries is external price referencing, i.e. international price comparison as the basis for price setting.

Objective: To determine the way in which drug prices are formed in the Bosnia and Herzegovina (BiH) market.

Method: Analysis of legal and by-law regulations that regulate this area.

Results: Until 2017, Bosnia and Herzegovina was the only country in Europe that did not regulate drug prices by a special legal document. In 2017, the document entitled " The Rulebook on the Method of Price Control, the Method of Forming Drug Prices and the Method of Reporting on Drug Prices in Bosnia and Herzegovina" ("Official Gazette of Bosnia and Herzegovina", number 3/17) was adopted, which regulates this area in Bosnia and Herzegovina. In BiH, the methodology of external price referencing is accepted, and the reference countries for comparing drug prices are Serbia, Croatia and Slovenia.

Conclusion: Regulation on price control by state Agency for drugs (ALMBIH) is contributing to equalisation and control of drug prices in Bosnia and Herzegovina. In recent years, there have been no changes in the pharmaceutical pricing forming policies in BiH and the methodology of external price referencing in BiH. The changes in the rulebook are expected in the forthcoming period.

Evaluation of a pharmacist-led medication therapy management programme at an outpatient diabetes and hypertension clinic in Malawi

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Introduction: Non-communicable diseases are the leading cause of death worldwide, with an estimated 75% of those deaths from individuals in low-to-middle-income countries. Non-communicable diseases are the second leading cause of death in Malawi, with rates continuing to increase. With frequent shortages of essential medications in Malawi, pharmacists are essential to ensuring patients receive optimised care and are adherent to medication regimens. Medication therapy management (MTM) programs have shown to be effective in other countries for improving medication adherence and decreasing hospitalisations, uncontrolled hypertension, and HbA1c levels. This study implemented and evaluated a pharmacist-led MTM programme at an outpatient hypertension and diabetes clinic in Lilongwe, Malawi.

Method: This was a 12-month prospective cohort study from August 2020 to July 2021. Individuals who had hypertension or diabetes and were over 18 years old were enrolled using systematic random sampling and assigned to either the control or intervention group. Participants in the intervention groups received a 30-minute MTM consult with a pharmacist where they checked blood pressure or HbA1C reviewed the patient's medication list, provided medication recommendations to the physician, and provided patient education and adherence counselling. Follow-up frequency ranged from weekly to quarterly, depending on the patient's disease progression and severity. Outcomes collected included: change in blood pressure or HbA1C, percent of patients within target blood pressure or HbA1C goals, number of hospitalisations, and medication adherence using the Single-Item Self-Rating Adherence Scale and pharmacist supervised pill counts (1=poor adherence and 5=excellent adherence). Data was analysed using descriptive statistics and multivariable regression.

Results: Eighty-three individuals were enrolled in the hypertension study (43 control vs. 43 intervention), and 98 individuals were enrolled in the diabetes study (50 control vs. 48 intervention). After controlling for age and sex, the

participants in the hypertension intervention group had a significant mean percentage decrease in both the systolic (adjusted mean percentage change (APMC) = -8.3%; 95% CI: -15, -2.0, p = 0.011) and diastolic blood pressure (APMC = -7.1%, 95% CI: -14, -0.12, p = 0.046) compared to the control group. Similarly, the diabetes intervention was associated with a significant percentage decrease in HbA1C levels (mean decrease = -2.0%, 95% CI: -2.8, -1.2, p < 0.001) compared to the control group. Average adherence for the study period was 3.68 in both the control and intervention groups for the hypertension study. Average adherence in the diabetes study was 3.66 vs. 3.92 for the control and intervention groups, respectively.

Conclusion: Significant reduction in systolic and diastolic blood pressure in the hypertension study and HbA1C levels in the diabetic study were noted after receiving pharmacist-led MTM consultations. This study laid a foundation for future scale-up to other hospitals in the country. Future research should evaluate the cost impact and patient and provider satisfaction with these services.

Integra Project: an extensive gathering of contributions from the civil society for the National Pharmaceutical Policy

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Introduction: The Integra Project is a partnership joining the National Health Council, the National School of Pharmacists Institute, and the Oswaldo Cruz Foundation (Fiocruz), with support from the Pan American Health Organization (PAHO) in Brazil and the National Pharmacists Federation. It was created to promote the engagement of civil society to address the nation's increasingly complex public health challenges, particularly during the COVID-19 pandemic. To accomplish this objective, the project implemented several strategies, including leadership training and popular policy consultations, publications, podcasts and online open seminars. In this abstract, the experience and results of the popular policy consultation are presented.

Method: This abstract outlines the experience of the popular public consultations. Although the consultations followed different methodologies, they all shared the same benchmarks, such as bringing regional and national leaders (from ONGs, health professional associations, community associations, universities, and the industry sector) with different perspectives together, promoting reflections through introductory debates, and working groups to discuss and elaborate proposals. All consultations were filmed, and rapporteurs and evaluation forms were provided for the participants at the end. The reports were analysed by thematic analysis.

Results: Since 2022, the Integra Project has conducted 16 popular public consultations across all Brazilian regions, including seven regional meetings, one national symposium, two conferences, and six public hearings. These popular consultations brought together over 600 people to discuss strategies for integrating and consolidating public policies. They were highly evaluated by participants and resulted in significant proposals for the Pharmaceutical Policy, categorised into eight themes: Medicines Supply; Intellectual Property and Access to Medicines; Facing Emerging and Reemerging infectious diseases; Social Needs-based Pharmaceutical Services; Social Needs-based research; Human Resources education for policy integration; Data, Information Technology, and healthcare intervention; and Diagnostic support technologies in healthcare. Besides the proposals, it is important to highlight that the popular consultations also helped to create and strengthen regional and national civil society networks to advocate for the population's right to access medicines and pharmaceutical services.

Conclusion: To have better health systems that are able to face contemporary health challenges, the authors need strategies that focus not only on policies by themselves but also on how they relate to other public policies. The categories of the proposals reflect the current challenges faced by the Brazilian health system that require a holistic approach to overcome. Moreover, engaging civil society in this process is even more important to guarantee concrete results. The reported experience was a crucial step towards developing better public policies to meet Brazilian social demands. The project already has other strategies thought to be implemented to move forward with policy integration. Its innovative approach to promoting health policy integration and strengthening the health system makes the project an exemplary experience to be shared among peers.

Literature review on sustainable development in the pharmacy profession

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Introduction: In September 2015, the United Nations General Assembly established 17 Sustainable Development Goals (SDGs) for 2030, aiming to promote sustainable development in environmental, social, and economic aspects through a

series of action plans, bringing peace and prosperity to future generations and the planet. In September 2020, the International Pharmaceutical Federation (FIP) responded to the UN's SDGs initiative by proposing 21 development goals. FIP believes that implementing these goals in the practice of pharmacy, pharmaceutical sciences, and education will be key actions for the transformation of the pharmacy profession over the next decade. This study reviews the literature on sustainable development in the pharmacy profession over the past five years to discuss the current progress in this field.

Method: An electronic literature database, PubMed, was searched for the keywords "sustainable development" and "pharmacy" in titles and abstracts using Boolean logic to filter literature from the past five years. After browsing titles, abstracts, and full texts, articles without accessible abstracts and full texts unrelated to the research topic were excluded, resulting in the literature necessary for this study.

Results: The search yielded 18 articles, of which one was excluded due to the unavailability of an abstract and full text, and 11 were deemed irrelevant, leaving six articles included in the study. These studies discuss or apply sustainable development in the pharmacy profession regarding Universal Health Coverage (UHC), pharmacy education, technology application, gender equality, and poverty. The results of the literature review are discussed from two perspectives: "people (pharmacists)" and "environment." From the "people" perspective, the literature focuses on talent cultivation and value demonstration. Discussions on gender equality in careers are emphasised in both developing and developed countries. From the "environment" perspective, poor or rural areas often have poorer medical accessibility. Through the application of technology and the assistance of relevant organisations and leadership, medical accessibility in these areas can be promoted, which may also facilitate the transformation of the pharmacy profession and the cultivation of relevant talents. With 2030 approaching, in addition to looking forward to calls from governments and academic societies from the top down, discussions and actions from the bottom up may also be a direction the authors can strive for.

Conclusion: This study searches and summarises literature related to the sustainable development of the pharmacy profession over the past five years, hoping that pharmacy professionals in Taiwan and all other member countries can understand the application and importance of sustainable development goals in the pharmacy field and further examine the strengths, weaknesses, opportunities, and threats of related developments domestically.

Making workplace culture intentional: The experience of the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, USA

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Introduction: Culture is an abstract notion, often not articulated, underlying all that occurs in an organisation. The concept of culture itself is not sufficient to support the development of a healthy and robust work environment. A vibrant workplace culture fosters social belonging and offers a unique advantage, contributing to employee retention, collaboration, and innovation. Consequently, workplace culture must be carefully designed, and not left to chance.

Objective: To describe the process used by the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (CU SSPPS) to intentionally design, implement, and sustain its workplace culture.

Method: A leadership team (LT) of administrators, faculty and support staff was assembled to envision a designed culture for the school. The LT followed the 8-step framework described in the book “Culture by Design.” The steps required to institutionalise the culture were: define, ritualise, select, integrate, communicate, coach, lead, and drive. Current practices and aspirations for a culture encompassing the school’s values were examined. An organisational culture consultant was hired to assist in identifying and describing desirable elements of an intentional culture. Feedback sessions gathered employee’s thoughts on behaviours that drive a positive workplace environment. A rollout event was created to introduce the behavioural fundamentals to the CU SSPPS. A culture baseline survey was distributed to assess the strengths and challenges within current school practices.

Results: Twenty-four culture fundamentals were identified in the areas of communication, interpersonal skills, equity, diversity, and inclusion, student-centeredness, and approach to work. A pocket-size card defining the behavioural fundamentals was distributed and discussed during an interactive session at a school-wide retreat. To sustain the designed culture, fundamentals are embedded in recurring school practices. Weekly emails expanding on each behaviour are sent by the Dean and discussed during meetings with ≥ three people. Feedback from these meeting discussions is collected. Visual aid elements related to the designed culture such as posters, videos, and flyers were created and placed in strategic spaces within the school to reinforce communication of the newly introduced culture. A total of

241 CU SSPPS employees were asked to complete the baseline culture survey.

Conclusion: The eight-step framework was effective in guiding the CU SSPPS in designing and implementing its desired culture. Feedback from meeting discussions and the baseline survey results will guide future initiatives focused on fostering the school culture. Annual surveys will aid in the identification of additional practices to reinforce the designed culture and ensure long-term success.

Solving incidence of medication errors with Root Cause Analysis method: from a case of erroring dispensing similar vaccines

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Introduction: According to Taiwan Patient-safety Reporting System (TPR) statistics, medication errors topped the list of total medical errors in 2021 (28.16% of all reported incidents), pharmacist dispensing was identified as one of the top three stages with a 16.1% occurrence rate. In the 2021 statistical data on medication error cases in Taiwan, approximately 10% of cases suffered health harm due to these errors, including five cases that led to death. This highlights the inherent risks associated with medication errors.

Objective: This report focuses on an incident related to an error in dispensing visually similar vaccines. Through the use of Root Cause Analysis (RCA) by pharmacists, four major underlying causes were identified (storage system, hardware, software and standard procedure), leading to intervention and improvement. Subsequent monitoring revealed no new vaccine-related medication errors, confirming the effectiveness of this improvement approach.

Method: This incident has been identified as a systematic problem through a review of the Incident Decision Tree (IDT). It has been categorised in SAC 2 using Severity Assessment Code (SAC) scales. As a consequence, RCA methodology was applied to analysis and improve processes to prevent similar incidents occurred.

The error in dispensing and its direct causes were focused on by gap analysis after investigating this case. Four root causes were identified by utilising the fault tree method:

1. Similar drugs were stored on the same floor in the refrigerator.

2. Barcode readers had difficulty working with QR codes on drug labels

3. The information system contained a typographical error, resulting in the same batch number being shared between typhoid vaccines and polio vaccines

4. Pharmacists failed to follow the standard procedure

Interventions were carried out in the month when the error occurred. These included storage adjustments, the addition of extra artificial labels on drugs with presenting brand names and unique identifier barcodes, upgrading the information system to prevent the use of the same batch number in different drug information fields, and extra education to pharmacists regarding the importance of adhering to standard procedures.

Results: Since the implementation of the corrective action plan, there have been zero cases of vaccine dispensing errors between July 2021 and December 2023. As a result, the improvement strategy was extended from pharmacy department to injection room. Additionally, regular batch number inspections were performed on data in information system, barcodes patched on drugs, and actual drug labels. No incidents of mismatched information were noted.

Conclusion: By practising RCA methodology, underlying causes were confirmed, and execution steps were reevaluated to ensure the standard procedure was well-implemented. This approach effectively prevents the recurrence of similar medication errors.

Characteristics of the outpatient care medicines that exited the reimbursement system during 2010–2022 – A nationwide register study

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Introduction: The aim of the medicines reimbursement system is to enable patients' access to necessary medicines. The reimbursement status and price of a medicine can have a significant influence on the number of issued and dispensed prescriptions. The stage of a pharmaceutical product's lifecycle may also affect the price and availability of the medicine at the community pharmacies. For new and often more expensive medicines, being included in the reimbursement system is essential for market entry and availability. The price of older medicines is typically lower, making them more affordable for patients.

Objective: Even though being included in the reimbursement system is essential for availability and patients' access to medicines dispensed by community pharmacies, several medicines exit the system every year. However, there is a lack of information on which medicines exit the system and at what stage of their life cycle. The aim of this study is to evaluate medicines exiting the reimbursement system using national register data. Furthermore, therapeutic areas, ages, pricing levels, and the criticality of the medicines are examined.

Method: In Finland, reimbursements are provided to patients directly at community pharmacies. Data on all medicines that exited the reimbursement system for at least one calendar year during 1.1.2010-31.12.2022 were retrieved from a nationwide database maintained by the Social Insurance Institution of Finland. The data were classified at the active pharmaceutical ingredient (API) level and completed using publicly available data sources including information on the date of the first marketing authorisation, prices, and inclusion in the EU list of critical medicines. Defined Daily Dose (DDD) was used as a proxy for the price levels. The age of the APIs was assessed according to the first marketing authorisations. Descriptive analyses were conducted using R.

Results: Between 2010 and 2022, a total of 150 APIs exited the reimbursement system. The most common therapeutic areas of the APIs were alimentary tract and metabolism (15%), cardiovascular system (15%), and nervous system (11%). Half of the medicines were for acute conditions, while the other half were for long-term use. Of all the APIs, 6% were included in the EU list of critical medicines, including, for example, phenoxymethylpenicillin.

After exiting the reimbursement system, 63% of the APIs remained on the market as non-reimbursable medicines and 37% exited the Finnish market immediately. The APIs that stayed on the market were, on average, younger (median age 28 years) than the APIs leaving the market (median age 31 years). Furthermore, the APIs staying on the market after exiting the reimbursement system were more affordable than the APIs leaving the market with median prices of €0.85 and €1.47 per DDD, respectively.

Conclusion: APIs, even some that are listed as critical in the EU, exit the national reimbursement system every year. APIs staying on the market are younger and more affordable compared to those leaving the market. The authorities should pay attention to the changes in the range of reimbursable medicines to ensure that essential medicines are available and affordable at community pharmacies also in the future.

Vaccine hesitancy: An obstacle amongst educators who are willing to accept COVID-19 vaccine at private sector schools in South Africa

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Introduction: An online global poll amongst 27 countries during the early stages of the COVID-19 vaccine roll-out in 2020 ranked South Africa as the fifth lowest country regarding COVID-19 vaccine acceptance due to vaccine hesitancy. Stakeholders from the Expanded Programme on Immunisation in South Africa (EPI-SA) highlighted vaccine hesitancy among parents as one of the primary challenges facing vaccination programmes. Previous research identified educators as potential influencers of caregivers/parents' vaccination-related decision-making. Hence, it is important to identify and understand complex drivers of vaccine hesitancy, as data are lacking amongst South African educators.

Objective: To investigate vaccination-related practices, reasons for different vaccination-related practices and predictors of vaccination behaviour amongst educators at private sector schools in South Africa.

Method: A descriptive quantitative survey using an online self-administered questionnaire on SurveyMonkey® targeted 35 937 private sector school educators in South Africa. Data was collected from August 2022 to February 2023 after ethical clearance for the study was obtained and permission granted by the South African Council for Educators (SACE). Informed consent was mandatory for completing the questionnaire. Data were collected on demographics, vaccination status, information regarding vaccine-related practices, vaccine influencers informing educators' vaccination decisions, and vaccine hesitancy using an adaption of the 5C antecedents of the vaccination behaviour scale, consisting of 16 Likert-scale items. Data was analysed with Epi Info™ after being downloaded from SurveyMonkey®. The 5C statements were scored as follows: 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=neutral, 5=slightly agree, 6=moderately agree, 7=strongly agree while 1 item within the antecedent 'collective responsibility was reverse scored. A mean score was calculated for each of the 5C items. The independent t-test was used to compare mean 5C scores stratified by vaccination status and vaccination practices.

Results: A total of 173 educators completed the survey, 131 of which completed questions that addressed the objectives of the study. Overall, 85.5% (112/131) of educators were

vaccinated with ≥1 dose of the COVID-19 vaccine. The majority of educators (93.0%; 53/57) had their youngest child fully vaccinated. High scores for all items of the confidence and collective responsibility determinants were identified as statistically significant predictors of uptake of the COVID-19 vaccine and advising parents to vaccinate their children. For the complacency determinant, low scores for items C4 and C6 were identified as statistically significant predictors of uptake of the COVID-19 vaccine and advising parents to vaccinate their children. Low levels of constraints, items C9 and C10 for uptake of the COVID-19 vaccine and items C8 and C10 for advising parents to vaccinate their children, were identified as statistically significant predictors of vaccination behaviours. None of the calculation items proved to be useful predictors for any of the vaccine behaviours investigated.

Conclusion: The majority of educators vaccinated themselves and their youngest children. However, vaccination refusal and reluctance were also reported. The results can be used to guide the design of future interventions to empower educators as positive influencers of vaccine uptake. The vaccine hesitancy results provided data that can be used to further adapt and validate a vaccine hesitancy scale for South Africa.

Pharmacists at the forefront: navigating ethical challenges and bridging global health disparities in the era of healthcare innovation

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Introduction: Pharmacists' roles now extend beyond traditional boundaries as healthcare undergoes technology-driven transformation. This necessitates investigations into the evolving role of pharmacists in addressing ethical challenges posed by innovations such as precision medicine, artificial intelligence (AI), and big data, as well as their contribution to mitigating health disparities. This is particularly crucial for low- and middle-income settings where these tools could be crucial for improving the quality of pharmaceutical care and services, given persistent disparities in these settings.

Objective: This work explored the ethical implications of healthcare innovations for pharmacists in developing settings, challenges in accessing and using these technologies, and the implications for high-quality health systems.

Method: This study employed a mixed-methods approach, combining a review of the literature with qualitative interviews with pharmacists. Ethical considerations in precision medicine, AI, and big data were discussed, and the role of pharmacists and the challenges in accessing and using these technologies were assessed.

Results: Findings suggest that pharmacists have crucial roles in decision-making in precision medicine, care provision, and managing patient data in AI applications. However, there must be an ethical structure to guide this. In developing settings, pharmacists could be instrumental in delivering technology-driven healthcare services, with a need to overcome infrastructural and educational barriers. Their involvement is crucial for improved healthcare outcomes and fostering the movement towards high-quality health systems. The unique position of pharmacists allows them to act as mediators between technological advancements and patient-centric care, and they could contribute to significantly reducing health disparities by adapting and implementing innovative solutions suitable for local contexts.

Conclusion: Pharmacists are pivotal in ensuring ethical, equitable, and sustainable healthcare in the face of rapid technological innovation and can contribute to equitable access to healthcare innovations. Hence, there is a need for future policies and models recognising and supporting their expanding role in the global health landscape.

Asociación Farmacéutica Mexicana: Socialising and supporting the pharmacist work during 58 years in Mexico

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Introduction: The Asociación Farmacéutica Mexicana (AFM = Mexican Pharmaceutical Association) was created in September 1966 to support the academic and professional work of pharmacists in Mexico. Its mission is mainly related to the pharmacist professional work at different levels such as academy, industry and regulatory affairs. Its members are pharmaceutical and chemistry students as well as different categories of health professionals, mainly pharmacists. AFM has played a central role in the pharmaceutic role; for example, it is part of the Mexican Pharmacopeia Administration (FEUM), and some professionals belong to the expert committee of this Institution and have participated in the establishment of the Mexican legislation related to product quality and pharmaceutical services. Considering the importance of pharmaceutical sciences innovation and development, the AFM also organises different educational

courses and national and international meetings where research, industrial topics and regulatory tendencies are discussed. In addition, the most important Pharmaceutical Industrial Fair (Expofarma) is organised by AFM every year to present market innovations. Finally, the Revista Mexicana de Ciencias Farmacéuticas, a scientific and divulgation magazine, is published by the AFM; this publication is considered an important issue in Mexico, and it is part of this legacy.

Objective: To divulgate the role of AFM for establishing different alliances for improving the academic and industrial interaction of Mexico worldwide.

Method: A retrospective study of the history of AFM was developed considering the historic documents and an analysis of AFM activities is presented to divulgate the actual work. Such analysis pretends to show the capacity of AFM to be considered as a Mexican reference for the FIP for establishing strategic collaborations at different levels in academy, industry, and regulatory affairs.

Results: AFM was founded in 1966 by an academic and industrial group of pharmacists that identified a necessity for the union to support the academic, industrial and regulatory activities of Mexican pharmacists. Nowadays, AFM is a consolidated Pharmaceutical Association that supports the development of science, technology and regulatory affairs at different levels including academy, industry, and government. Its role has been critical for the pharmacist's work in Mexico.

Conclusion: AFM is the most important Pharmaceutical Association in Mexico, and it is able to establish international alliances for the improvement of students and professionals related to the pharmaceutical sciences.

An online course for pharmacy preceptors: a pedagogical approach for pharmacists

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Introduction: The International Pharmaceutical Federation (FIP), Development Goal 2, highlights the need to ''Develop structured approaches to early career mentoring systems to support novice practitioners to engage with peers and preceptor.'' The South and Autonomous Regions Branch (SARB) of the Portuguese Pharmaceutical Society (PPS) developed and launched an asynchronous course to promote pedagogical training for Portuguese pharmacists to improve their preceptorship skills. The course was developed in close collaboration with national professional associations, Higher Education Institutions (HEI) and Students' Associations.

Objective: To present the preliminary results of an online course for pharmacy preceptors that aims to train pharmacists to be preceptors of curricular and extracurricular internships in every area of the pharmaceutical profession to improve guidance of internships by pharmacists.

Method: To measure the impact of the online course on pharmacists' self-confidence during internship guidance, a survey was carried out before and after the course. The level of self-confidence in empowering students in areas such as ethics, patient engagement, multidisciplinary collaborations, decision-making, mentoring, teaching pharmacists' roles, as well as evaluation and monitorisation of results was assessed using a 5-point Likert scale, where one corresponds to strongly disagree and five to strongly agree, in relation to self-confidence in the areas presented above. Microsoft Excel 2023 and IBM® SPSS Statistics Version 28 were used to characterise and analyse the variables studied. The chi-square test was applied to evaluate the correlation between the variable making the online course and the variable self-confidence of pharmacists greater than four on the Likert scale. The confidence interval considered was 95% ($p < 0.05$). Pharmacists who did not complete the course were excluded from the study.

Results: The course was successfully completed by 211 pharmacists, all of whom participated in both the initial and

final surveys. There was a statistically significant association between participation in the course and a self-confidence higher than four on the Likert scale for internship guidance (χ^2 (1) = 15,483; $\rho < 0.001$). There was also a statistically significant association between attending the course and scoring higher than four on the Likert scale for evaluating and monitoring outcomes (χ^2 (1) = 27,150; $\rho < 0.001$), leadership (χ^2 (1) = 17,476; $\rho < 0.001$), mentoring (χ^2 (1) = 13,526; $\rho < 0.001$), decision making (χ^2 (1) = 9,399; $\rho = 0.002$), developing multidisciplinary collaborations (χ^2 (1) = 25,355; $\rho < 0.001$) and teaching pharmacists' roles (χ^2 (1) = 9,604; $\rho = 0.002$).

Conclusion: The study suggests that pedagogical training for pharmacy preceptors is important for their self-confidence in performing preceptorship.

Empowerment of Portuguese pharmacists for political participation and civic engagement: preliminary results on the development and implementation of a programme

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Introduction: It is becoming increasingly important to involve all healthcare stakeholders (from healthcare professionals to patients and caregivers) in health decisions. In this way, pharmacists can play a prominent role in the development and implementation of evidence-based, practice-oriented policies that are aligned with national policies and health system priorities. To do this, pharmacists must be aware and prepared to act accordingly.

Objective: This study aims to present preliminary results of the development and implementation of the "Political Empowerment Programme", a programme to empower Portuguese pharmacists for political participation and civic engagement, implemented by the South and Autonomous Regions Branch (SARB) of the Portuguese Pharmaceutical Society (PPS).

Method: To set up the "Political Empowerment Programme", the PPS team benchmarked other initiatives and held several meetings to discuss the content and structure of the programme. The programme was divided into three stages. The first stage was developed exclusively by the PPS team, the second and third stages of the programme were presented to reference partners in the field of political science who were involved in the development of the scientific content.

Results: The first phase consisted of virtual and face-to-face meetings with several key opinion leaders (KOLs), named "MeetUp at the Portuguese Pharmacists' Society", which aimed to promote the involvement of pharmacists in pressing social and civic issues. More than 342 pharmacists actively participated in the referred events during this phase, involving 13 different KOLs from 2019 to 2023. The last two stages are being developed in partnership with the Institute of Social Sciences of the University of Lisbon (ICS-ULisboa). In the second phase, to empower pharmacists for their political interventions, an intensive course of ten subjects and 27 hours of study has been designed. Each subject is composed of an asynchronous class, taught by ICS-ULisboa researchers, complemented by a discussion session with various KOLs. The first edition of the course started in February 2024 and will end in June 2024. By immersing participants in a thorough soft and hard skills plan, this phase of the programme will ensure that pharmacists learn about political science and share information with KOLs, building their capacity for more informed political interventions. 240 participants (pharmacists and students-members of the PPS) registered for the course and have already completed the first subject on political regimes, government systems and institutions and attended the discussion session with 3 KOLs. In the third and final stage, the PPS will produce a toolkit to guide and detail a pharmacist's political and civic action as a guide for pharmacists and their interventions at the local, regional, national or international levels.

Conclusion: The "Political Empowerment Programme" has a high level of pharmacist participation, demonstrating the relevance of a training project for political and social intervention.

COVID-19 and cannabis consumption – selected countries

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Introduction: Problems with sleep, eating, or stress result in a greater vulnerability to psychoactive substance use among adults. During the COVID-19 pandemic, isolation and social insecurity have increased. The mental health effects of the COVID-19 pandemic are likely to appear in many different ways: the development of symptoms in previously healthy people and new episodes in those with a predisposition to mental disorders. Investigating the impact of these factors on psychoactive substance use appears to be an important element related to prevention.

Objective: The study aimed to examine changes in psychoactive substances such as cannabis use during the COVID-19 pandemic and patterns of cannabis use.

Method: The study was carried out in 2022 using an original survey in Poland and in Canada. The research tool was an original questionnaire divided into a few parts. Correlation analysis was employed using Pearson's chi-squared test and Cramér's V test to assess the dependence, strength, and direction between variables.

Results: The percentage of respondents admitting to marijuana use was noticeably higher in Canada than in Poland. Most Poles acquire marijuana from acquaintances, family members, or friends, while most Canadians obtain it from licensed producers or authorised retail outlets. The reasons behind these observations are likely influenced by different legal frameworks related to marijuana in the surveyed countries.

Conclusion: The study indicated that during the pandemic period, people consumed more marijuana compared to the pre-quarantine period. Especially more medical marijuana, which is connected with the law in Canada.

Development of a model to evaluate the impact of pharmacists' perspectives on quantitative benefit-risk assessment of vaccines in the public health setting

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Introduction: Several regulatory guidance on structured benefit-risk assessment (BRA) have been released over the past years. For complex situations, it is recognised that patients' and prescribers' perspectives are vital for weighing the importance of key benefits and key risks of treatments. Quantitative BRA methods such as multi-criteria decision analysis (MCDA) allow for the consideration of such perspectives and have been used for vaccines. With the campaigns for and increasing role of pharmacists in vaccination, it is important to evaluate the impact of the pharmacists' perspectives on the benefit-risk of vaccines.

Objective: To describe a process and model to evaluate the impact of pharmacists' preferences on the benefit-risk balance of vaccines.

Method: Pharmacists in public health and a variety of practice settings have had an active role in vaccination campaigns. The model has been developed using human papillomavirus (HPV) vaccination. Key benefits and risks of each HPV vaccine – 9vHPV, 4vHPV, 2vHPV- against no vaccination are derived using literature and trial findings and organised as a hierarchical effects tree. To account for the relative importance of effects, pharmacists weigh the different efficacy and safety profile attributes to ensure that the most clinically important and practice-related attributes carry more weight in the final benefit-risk calculation. The weighted average of the preference scores on each criterion is calculated, and the scores are summed into a single overall weighted preference value.

Results: MCDA methods support more objective decisions about the BR of vaccines and about the selection of populations for vaccination campaigns. In this MCDA model, the judgments are made by pharmacists involved in public

health vaccination campaigns about the importance of different aspects of vaccination, with an objective view of the size of possible vaccine effects. The model shows that pharmacists' preferences are relevant to the decision problem.

Conclusion: It is anticipated that this process and model will enable the evaluation of the pharmacists' contributions and will overcome limitations in the "number needed to vaccinate" and "number needed to harm" metrics commonly used to evaluate vaccines.

Attitudes and practices of female university students in the management of primary Dysmenorrhea

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Introduction: The field of female reproductive health is frequently overlooked, contributing to both a research and a gender health gap. Dysmenorrhea, a condition affecting women globally across diverse ages and cultures, is characterised by high prevalence yet remains underdiagnosed and undertreated. Recent literature underscores the insufficient global knowledge surrounding dysmenorrhea treatment options, resulting in inadequate intervention from healthcare professionals. Women primarily rely on non-medical sources for information, leading to generalised, inadequate, or inaccurate knowledge acquisition. Despite the availability of various pain management options, some females persist in suffering silently, potentially resulting in health concerns such as inappropriate self-medication, suboptimal drug dosages, incorrect indications, and safety issues related to drug interactions. Attitudes towards dysmenorrhea vary, with some viewing the pain as a normal burden for women to endure. Empirical studies on pain related to women's health, particularly dysmenorrhea, are notably lacking both in the South African context and on a global scale. This dearth underscores the urgent need for research to address this gap in understanding and treatment.

Objective: The purpose of this study was to investigate the contemporary practices and attitudes among female university students regarding the management of primary dysmenorrhea. Specifically, it aimed to examine their perceptions of various pain management interventions for this condition. By delving into these aspects, the study sought to describe and explain the experiences, attitudes, and behaviours of female university students towards dysmenorrhea, its management, and the underlying factors/mechanisms that influenced these within the environmental, personal health and illness domains. Ultimately, the findings aim to contribute to the enhancement of patient-centred care and the delivery of pertinent treatments for primary dysmenorrhea.

Method: A qualitative study design was used. Eight in-person focus group discussions were carried out at Rhodes University over the course of a month. These discussions examined knowledge of dysmenorrhea, symptom experience, pain management strategies & outcomes and the impact of dysmenorrhea.

Results: Participants shared diverse experiences with period pain, noting significant variations in intensity, location, and changes over time, challenging a single definition. Overall, descriptions of the pain had negative connotations, and it was reported that the pain had a significant impact on their daily life, not only physically but psychologically, academically, socially, and professionally. While some found relief in traditional remedies like hot water bottles and herbal teas, medical treatments -both pharmacological and non-pharmacological- were often ineffective in addressing the underlying causes of their pain. Beliefs of the cause of dysmenorrhea ranged from hormonal changes and diet to Cultural/traditional beliefs about certain foods, activities, or behaviours.

Conclusion: Primary dysmenorrhea is being inadequately managed by Rhodes University students. There is a need for more health education on this topic by healthcare professionals. Overall, the discussions underscore the complexity of menstrual pain experiences and the importance of addressing societal stigma, improving communication, and tailoring management strategies to individual needs.

Cultural competence among healthcare professional educators: A mixed-methods study

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Introduction: As cultural diversity gains global prominence, healthcare professional educators (HPEs) are expected to exhibit a high level of cultural competence in education. Responding to this necessity requires the establishment of healthcare education that is oriented toward sustainability.

Objective: This study aimed to investigate HPEs' perceptions of cultural competence at the Qatar University Health Cluster (QU-HC).

Method: A convergent mixed-methods design was applied. The quantitative phase involved 118 HPEs at QU-HC responding to the Multicultural Teaching Competency Scale (MTCS). The qualitative phase included three focus groups (FGs) with 22 HPEs guided by Campinha-Bacote's (1999)

model of cultural competence. Thematic analysis was applied to analyse FGs data.

Results: Seventy-one educators responded to the MTCS (response rate was 60.2%), and twenty-two educators attended the FGs. HPEs demonstrated a moderate level of cultural awareness (total MTCS mean = 57+- 7.8). The FGs revealed that the HPEs exhibited awareness and responsive teaching, but individual and institutional factors needed improvement.

Conclusion: This study expands upon the existing literature concerning the impact of cultural diversity on the teaching and learning aspects of health profession programs, specifically within the Middle East context. It is recommended that health professional programs intensify the cultural orientation provided to educators, reanalyse the curricular content to serve diverse patients, and explore innovative approaches that embrace cultural diversity and sustainability.

Assessing the knowledge, attitudes and likelihood of pharmacy students to adhere to ethical practise in Zimbabwe

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Introduction: Pharmacy is a health profession that deals with the manufacturing, formulating, dispensing and control of medicines used to treat diseases. Pharmacists and pharmacy students are failing to adhere to professional conduct. Most research efforts to date have focused on attitudes, knowledge and perceptions of pharmacists on ethical conduct. Limited data is available in Zimbabwe on the knowledge, attitudes, and likelihood of pharmacy students to adhere to professional standards.

Objective: To assess levels of knowledge, attitudes, and likelihood of pharmacy students to adhere to ethical practice in Zimbabwe.

Method: A cross-sectional study was carried out between March 2019 and April 2019 on final-year pharmacy students in classrooms located at the University of Zimbabwe and at Harare Institute of Technology. A total of 99 final year students were recruited and 76 participants completed the questionnaire. The data collection tool collected information on demographics, knowledge, perceptions, attitudes, the likelihood of professionalism, general ethics and behaviours engaged. Data analysis was performed using the STATA 13.0 software package, and a linear regression model was fitted to identify predictors of the future likelihood of professionalism, whilst a correlation coefficient was used to ascertain if there is a relationship between knowledge, attitudes, perception and likelihood of professionalism.

Results: Participants are knowledgeable on pharmacy profession forensics in Zimbabwe, with a group average knowledge score of 66.34%. Pharmacy students have positive perceptions of professionalism and positive attitudes towards the profession. More than 90% of the participants had positive perceptions of professionalism and positive attitudes towards professionalism. Scoring group average Likert scores of 3.6 and 3.8 for perceptions and attitudes respectively. Thirty-nine percent of the participants showed that they are unlikely to adhere to professional conduct, and 93% of the sample population scored a Likert score > 3 on general ethics. The likelihood of being professional was associated with average perception ($\chi 2=5.34$, $p = 0.02$) and ethical behaviour. Students who had a positive perception of the profession were 73% less likely to have average Likert scores of ≤ 2 on the likelihood of professionalism at a 95% confidence interval. Students with bad attitudes are 2.8 times more likely to also have negative perceptions of the profession.

Conclusion: Unethical behaviours such as academic dishonesty, sale of pharmacy medicines from rooms/satchels and masquerading as pharmacists are being practiced by pharmacy students. Students need to be groomed on ethical behaviours and need to be helped to develop a positive attitude on professionalism.

Mental health and non-dispensed medications for chronic diseases – a nationwide register study on individuals with Type-2 diabetes

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Introduction: Medication adherence is a multifaceted phenomenon for which various factors can influence. Previous studies have shown that a substantial share of issued prescriptions is never dispensed from pharmacies. Mental health issues are linked with an increased risk of non-adherence to medicines. Furthermore, the high cost of medication and low income both increase non-adherence. Results from studies focusing on adherence to chronic disease medications, such as Type-2 diabetes medicines, have been varying. It is known that there is an association between low income and diabetes, and moreover, diabetes, mental health issues and low income have a multidimensional relationship.

Objective: This study examines the association between psychotropic medicine use and non-dispensed antidiabetic medicine prescriptions.

Method: The nationwide register data included all outpatient prescriptions and dispensations in Finland in 2020–2022, recorded in the National Prescription Centre. Prescriptions that had not been dispensed in the community pharmacy within the two-year prescription validity period were defined as non-dispensed prescriptions.

The study population included all individuals aged over 18 who had at least one prescription prescribed in 2020. Individuals with at least one psychotropic medication prescription (Anatomical Therapeutic Chemical (ATC) classification N05A, N05B, N06A, N06C) and individuals with at least one antidiabetic medicine prescription (A10B) were identified from the population. Data on annual income from the National Incomes Register were classified as low (under 75% of median income), middle (75-200% of median income) and high income (over 200% of median income) and linked to the study population. Information on age, sex, and annual medicine expenditures as an estimate of morbidity were also accounted for.

Among individuals with at least one antidiabetic medicine prescription, logistic regression was used to compare the non-dispensing of antidiabetic medicines in individuals with and without psychotropic medication.

Results: In total, 254,472 people had antidiabetic prescriptions prescribed in 2020, and 24.5% of them also had prescriptions for psychotropic medication. 9.6% of people with antidiabetic prescription had at least one non-dispensed antidiabetic prescription.

Accounting for income and patient characteristics, patients with prescriptions for psychotropic medication had higher odds (OR 1.29; 95% CI 1.25–1.34) of having at least one non-dispensed antidiabetic medicine prescription. Compared to the lowest income class, the middle-income class had lower odds (OR 0.90; 95% CI 0.89–0.92) of non-dispensing antidiabetic medicine prescriptions. There was no statistically significant difference between the lowest and highest income classes.

Conclusion: Mental health issues are associated with lower adherence to antidiabetic medication. Pharmacists and other healthcare professionals should work in collaboration to support medication adherence with patients who have psychotropic medication in addition to antidiabetic medication. Further studies focusing on the risk factors associated with non-adherence among multimorbid patients are needed.

Accounting for capacity constraints in cost-effectiveness analyses of pharmacogenetic testing within mental health: A systematic review

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Introduction: Pharmacogenetics (PGx) is the interrelationship between genetic factors and response to medicines. The potential for improvement in the effectiveness and safety of medicines is the basis for the value of PGx-testing in the selection of medicines. Published systematic reviews have identified associations between gene-drug pairs and are used to develop clinical guidelines for the use of PGx-testing in mental health.

Pharmacogenetic testing is high on the policy agenda, with NHS England including it as a key priority within the next three years. To inform the roll-out of PGx-testing, it is necessary to understand the potential value of PGx-testing to healthcare systems and patient populations. Cost-effectiveness analyses are key in this regard. It is also important to understand the implementation issues relevant to healthcare systems. Constraints in the system to deliver interventions are a key implementation issue. Taking capacity constraints into account can influence the balance of costs and health consequences.

Objective: The aim of this study was to determine if, and how economic evaluations of PGx-testing in mental health have taken account of the impact of constraints and barriers, and if so, what the effect on the cost-effectiveness analysis was.

Method: A systematic review was performed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The protocol was published (PROSPERO CRD42023430483). An electronic search strategy combined keywords relevant to 'pharmacogenetic testing' and 'mental health' with a published search strategy for identifying economic evaluations (see National Health Service Economic Evaluation Database). Medline was searched via OVID (between Jan 2013 and April 2023). A capacity constraint is defined as 'any factor which impedes or limits the amount of health status produced for a population of patients receiving specified interventions, or policies, provided by the healthcare system'. Inclusion criteria were any economic evaluation relevant to adults (18 years of age and over) with a mental health illness, including a PGx-testing intervention. Titles and abstracts were screened by two reviewers in parallel. Additionally, the reference list of all included studies was checked to identify any potentially relevant studies. The included studies were critically appraised for reporting standards using the Consolidated Health Economic Evaluation Reporting Standards 2022

(CHEERS 2022). Data from the studies were extracted using a bespoke data extraction form, and a narrative synthesis was reported.

Results: Nine published economic analyses were identified in total, with varying results. The analyses were performed in different countries, including the UK (two), Netherlands (two), Canada (one) and USA (four), using either single or multiple drug-gene pairs. PGx testing was found to be cost-effective in Canada and the USA. However, for the UK, cost-effectiveness was 'likely', while in the Netherlands, one analysis indicated it was not cost-effective and the second inconclusive. None of the studies mentioned the importance of capacity constraints, quantitatively or qualitatively.

Conclusion: This review identified a key evidence gap for decision-makers. Future research should focus on identifying and capturing capacity constraints in economic evaluations in mental health, and its inclusion into cost-effectiveness analyses to understand the impact of implementing PGx-testing for mental health into practice.

Pharmaceutical ethics standards from the perspective of patients and technology

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Introduction: The document "Guidelines on Good Pharmacy Practice: Standards for Pharmacy Services" is a guide published by FIP in 2010 aimed at describing how pharmacists can help improve pharmaceutical care, health promotion, and patient medication use. This work, in collaboration with the World Health Organisation (WHO), defines four roles of the pharmacist in their professional activity, allowing the establishment of quality standards in daily practice.

Role 1: Acquire, maintain, store, prepare, dispense, and dispose of medications.

Role 2: Provide effective medication therapy management.

Role 3: Work to improve the efficiency of the healthcare system and public health.

Role 4: Maintain and improve professional performance.

From its publication to the present day, technology and artificial intelligence have emerged as a reality in this daily work. The authors propose a necessary examination of quality standards from this standpoint to identify new ethical points of reflection in this daily work as pharmaceutical professionals.

Objective: This work aims to conduct an analysis of quality and ethical standards in the professional practice of Spanish community pharmacy in 2023, with reference to technological changes.

Method: To this end, a bibliographic review was conducted in Pubmed and in Spain's two most widely read newspapers, "La Vanguardia" and "El País", as well as the most visited digital newspaper, "El Confidencial", using the descriptors "community pharmacy, ethics, medicine, technology". Opinions and analyses on ethical standards in community pharmacy were compared with those of the International Pharmaceutical Federation (FIP) and the World Health Organisation (WHO) of 2010, the Code of Ethics of Pharmacists and Nutritionists, the "Letter to Health Agents 2017" from the Catholic Episcopal Conference, the code of ethics of the General Council of Official Colleges of Pharmacists and the ethical code of the Spanish Society of Hospital Pharmacy.

Results: The analysis reveals that the patient and their needs are often invisible in the professional bureaucracy of digital healthcare; if there are no funders, research projects on new drugs or therapies are not carried out, not published, and information is distorted on social networks depending on the promoter's money. The third conclusion of the study is the qualification of the patient as "guilty" for not complying with medical orders that do not fit their lifestyle; pharmaceutical care prioritises the medication and is not patient-centred. Finally, this work highlights that technology and artificial intelligence are more exposed to economic conflicts of interest because the prescriber and the dispenser are the same person, the pharmacist or the "advisory robot".

Conclusion: In conclusion of the results, a new analysis of international best practice documents and professional, ethical codes is necessary to adapt to the new challenges of community pharmacy from the perspective of professional ethics, quality standards in daily practice, and technological changes with which the authors work daily.

How has biosimilar prescribing evolved? Register study on the changes in prescribing in 2018–2023

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Introduction: Due to their costs and effects on pharmaceutical expenditure, biologic medicines are a globally acknowledged challenge. In Finland in 2022, seven out of ten medicines with the highest reimbursement expenditure were biologic. Furthermore, biologic medicines for which one or more biosimilars existed accounted for 12% of all reimbursement costs. Thus, the uptake of less expensive biologic medicines, which are often biosimilars, is encouraged globally.

Objective: The aim of this study was to study how biosimilar prescribing has evolved in Finland from 2018 to 2023. More specifically, the aims were to study 1) the share of biosimilar prescriptions of all prescriptions in treatment initiations and 2) the share of biosimilar prescriptions of all prescriptions in general, including both treatment initiations and renewing an ongoing medication.

Method: There were 13 biologic outpatient medicines for which one or more biosimilars were available in Finland during the study period. Information on prescriptions was searched from the Dispensations reimbursable under the National Health Insurance (NHI) Scheme register maintained by Kela in February 2024 and analysed with descriptive statistics.

Results: From 2018 to 2023, an average of 257,403 prescriptions (0.9% of all outpatient care prescriptions in Finland) for biologic medicines for which biosimilars were available were written annually. During the study period, treatment initiations consisted of 77.1% and renewals 22.9% of all prescriptions. The share of biosimilars in treatment initiations has risen from 11.9% in 2018 to 50.6% in 2023 and in all prescriptions from 13.1% in 2018 to 50.8% in 2023. However, there is a great variation in the uptake among therapeutic groups. The prescribing of biosimilars has been high in filgrastim and somatropin during the entire study period, which may be affected by a higher number of biosimilar players on the market, the market exit of the originator product, and the exclusion of the originator from the reimbursement scheme. On the contrary, low biosimilar prescribing in seen in insulins glargin and aspart throughout the study period which may be due to evergreening phenomena and the uptake of concentrated versions of insulin products. Increase in the prescribing of biosimilars in all prescriptions is seen in adalimumab, etanersept and pegfilgrastim, for example.

Conclusion: Prescribing biosimilars has become more common in both treatment initiations and in all prescriptions in general in Finland in 2018–2023. However, especially insulins are different from other groups of medicines, as the biosimilar uptake appears slow. In the future, more measures to support the uptake of less expensive biologic medicines and active price competition are still needed.

Uptake and availability of new outpatient cancer medicines in 2010–2021 in Nordic countries

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Introduction: Cancer medicines are one of the fastest growing and evolving therapeutic areas in the pharmaceutical industry, as novel cancer medicines form approximately a third of all new compounds in the medicine pipeline and the largest number of new marketing authorisations in comparison to other therapeutic areas. Many novel therapies can be used in outpatient care based on their oral administration route, which has led to increasing costs of outpatient care cancer medicines. In Europe, decisions on pricing, reimbursement and uptake of novel therapies are made at the national level. Due to the high costs of these therapies, patient access to medicines is limited if medicines are not covered by a publicly funded healthcare system. Because of the rising costs and a simultaneous will to manage the unmet medical needs of cancer patients by authorising medicines in earlier phases of their development, many countries have launched managed-entry agreements between pharmaceutical companies and healthcare payers to increase the uptake of novel therapies.

Objective: The authors studied the distribution, costs and uptake of new cancer medicines and the adoption of managed entry agreements for these medicines used in outpatient care that were granted marketing authorisation in Europe in 2010–2021.

Method: E-mail survey of competent authorities, meaning pharmaceutical service organisers, payers or other government or non-government actors developing pharmaceutical service operations, in Denmark, Finland, Iceland, Norway, and Sweden in April-June 2022. The data were analysed using frequencies and percentages for descriptive analysis.

Results: Cancer medicines can be distributed both via hospitals or hospital pharmacies for inpatient use and via community pharmacies for outpatient use in Finland, Iceland, Norway, and Sweden. In Denmark, cancer medicines are predominantly distributed via publicly funded hospitals. The costs of cancer medicines had notably gone up in all Nordic countries from 2010 to 2021. The number of reimbursable medicines out of 67 new cancer medicines that were granted marketing authorisation in Europe varied from 36 products in Denmark and Iceland to 51 products in Sweden. Managed entry agreements, often with confidential discounts, were in use in all Nordic countries. The number of agreements varied from three agreements made in Iceland to 35 agreements

made in Finland. Average days from authorisation to reimbursement of new cancer medicines varied from an average of 416 days in Sweden to 895 days in Denmark.

Conclusion: Nordic countries share similar characteristics but also differ in terms of the details of distribution, adopted managed entry agreements, market-entry, and availability of new orally administered cancer medicines used in outpatient care. The costs of cancer medicines have increased in all Nordic countries during the last decade. The number of reimbursable novel cancer medicines and managed entry agreements vary between countries, which may be due to differences in organising health care. However, Nordic countries show good agreement for 2010 to 2021 in entry and reimbursement decisions of novel cancer medicines.

Finland as a trailblazer in the uptake of less expensive biologic medicines

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Introduction: The use of biological therapies has vastly increased. Due to their high costs, biologic medicines significantly contribute to pharmaceutical expenditure. Thus, the uptake of less expensive biologic medicines, often biosimilars, is encouraged globally. Finland is taking extensive measures to support the uptake of less expensive biologic medicines: steering of prescribing was introduced in 2023, and the pharmacist-led substitution of all biologic medicines but short-acting insulins is introduced in stages during 2024-2026. Finland will be the first European market to introduce measures to this extent and a trailblazer globally.

Objective: The aims of this study are to study: 1) the effects of steering of prescribing of individual physicians conducted by the Social Insurance Institution of Finland (KELA), and 2) the effects of pharmacist-led substitution of biologic medicines, especially to the use and costs of biologic medicines. This study will provide internationally unique information on the steering of prescribing of, and on the extensive pharmacist-led substitution of biologic medicines. The study is part of a large consortium study on the pharmacist-led substitution of biologic medicines with a total of eight national research organisations and universities and two patient organisations involved.

Method: A retrospective register study is conducted by using the statistics of the Social Insurance Institution of Finland (KELA).

Results: In one example in the steering of prescribing, a total of 2,413 prescriptions, in which one biological medicine price difference between products existed, were observed from March 2023 to January 2024. The least inexpensive biologic medicine was prescribed in 51% (n = 1 230) of the cases. There was a justified reason that could be related to the use of a dispenser, for example, to prescribe other medicine than the least inexpensive one in 7% (n = 169) of the cases. The share of the least inexpensive product out of all prescribed products rose during the observation period: in this active ingredient, the share rose from 8% in March 2023 to 55% in January 2024. The effects of pharmacist-led substitution will be reported after the introduction of the substitution in April 2024. Savings of 20M€ annually for reimbursement expenditure are expected.

Conclusion: According to preliminary results, the steering appears to influence the share of the least inexpensive product prescribed, at least in some active ingredients. This study will contribute by providing insight into the effects of both steering of prescribing and pharmacist-led substitution and whether expected savings are met.

Contribution of Pharmacists during COVID-19 pandemic: A case study of Ghana

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Introduction: The COVID-19 pandemic adversely impacted societies and healthcare systems all over the world. Ghana, like all other nations, was faced with the challenge of mitigating the spread of the virus while ensuring the continued provision of essential healthcare services. At the frontline of this battle were pharmacists, like other healthcare professionals. Pharmacists-led interventions proved crucial in protecting the health of the public during this turbulent period. While the global and local response to COVID-19 has been extensively documented, the specific contributions of Ghanaian pharmacists often remain under-recognised. Their multifaceted roles encompassed various aspects of pandemic response, from policy advocacy to community engagement and clinical care.

Objective: This review examined the diverse contributions of pharmacists in Ghana to the nation's response to COVID-19. It explored their seminal involvement in national policy interventions, community healthcare, hospital settings, and risk communication strategies, emphasising the critical role they played in mitigating the impact of the pandemic.

Method: The current work employed a case study approach to systematically describe contributions of pharmacists in Ghana to COVID-19 response. Through a comprehensive analysis of available data and firsthand reports, this review

synthesises the experiences and initiatives undertaken by pharmacists across different sectors in Ghana during the COVID-19 pandemic.

Results: Pharmacists in Ghana, represented by the Pharmaceutical Society of Ghana (PSGH), actively engaged in policy formulation, advocating for the expansion of their scope of practice to include vaccination and contributing to the development of clinical guidelines. At the community level, pharmacists served as accessible healthcare providers, offering essential services, COVID-19 screenings, and promoting public health measures. In hospitals, pharmacists optimised medication regimens, managed drug shortages, and facilitated antimicrobial stewardship. Additionally, through effective risk communication strategies, pharmacists combated misinformation and promoted evidence-based practices, leveraging their credibility and accessibility. Pharmacists were also involved in producing antiseptics and sanitisers and contributing to national resource mobilisation.

Conclusion: The pivotal role of pharmacists in Ghana's response to COVID-19 underscores the importance of recognising and supporting this essential healthcare workforce. Their contributions across policy advocacy, community engagement, clinical care, and risk communication have been instrumental in mitigating the impact of the pandemic. In the medium to long term, continued and deliberate investment in the pharmacy profession is paramount to enhancing healthcare resilience and preparedness in the face of future health crises.

Mental health distress among pharmacy students in Ghana and its impact on academic performance

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Introduction: The Doctor of Pharmacy (PharmD) programme in Ghana is quite a rigorous one, and challenging. Given this huge academic burden, compounded by the demands of familial and societal expectations of academic excellence. Mental health challenges can affect everyone, irrespective of age, educational or socio-economic status. However, due to a plethora of factors, PharmD students may be prone to a number of mental health disorders. Consequently, assessing their psychosocial distress levels is important to provide for targeted interventions.

Objective: The study sought to investigate the prevalence of mental distress among pharmacy students in Ghana, and to determine any impact it may have on academic performance, so that the findings can be utilised by policy makers to develop targeted interventions.

Method: A cross-sectional study of 482 pharmacy students aged 18 and above was conducted using the 21-item Depression, Anxiety, and Stress Scale (DASS-21) to measure levels of mental distress via an anonymous, internet-based survey. The study protocol was reviewed and approved by Noguchi Memorial Institute for Medical Research's Institutional Review Board (NMIMR-IRB # 043/21-22).

Results: Out of the 482 students, 244 were females (50.6%), and 238 were males (49.4%). The highest prevalence of mental health distress among pharmacy students was anxiety (70.7% [66.6%,74.8), followed by depression (63.1% [58.8,67.4]) and then stress (42.7 [38.3,47.1]). Furthermore, 36.1% [31.8,40.4] of participants showed symptoms of all DAS, while more than 80% [76.4, 83.6] of participants reported symptoms for at least one of the DAS parameters. The results reveal that males are less likely to show anxiety (Odds = 0.984, *p-value = 0.91*], depressed (Odds = 0.835, *p-value = 0.162*), stressed [Odds = 0.73, *p-value = 0.002*] than females.

Conclusion: The study concludes that even though DAS levels are high among pharmacy students, it has not adversely impacted academic performance. The high level of DAS still requires targeted intervention programmes by the guidance and counselling sessions of the various universities as well as other stakeholders. This program, through its project activities, should also pay special attention to the vulnerable subgroups (females, first-year students and final-year students).

Empowering mental wellness: A culturally tailored app intervention in an HBCU setting

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Introduction: The United States faces a pressing mental health crisis, particularly affecting Black, Indigenous, and people of colour (BIPOC) communities, who historically encounter inequities in accessing mental health services. The crisis is exacerbated among college students, with alarming increases in symptoms of depression, anxiety, and suicidal ideation, despite the availability of resources within educational institutions, mental health issues persist, impacting academic performance and career trajectories. To address these challenges, universities have a unique opportunity to intervene and support students' mental well-being. Culturally appropriate and accessible solutions are needed to combat barriers to mental health care, particularly

in Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutions (MSIs).

Method: A wellness application was devised within a Historically Black College and University (HBCU) context, facilitating the establishment of a network of student ambassadors focusing on mental health. This initiative was specifically designed to harness campus-specific resources, culturally relevant approaches, and external support systems, all aimed at optimising the mental well-being for students. Through the application, participants could monitor their mental health concerns and access on-campus services tailored to their individual needs. Undergraduate and graduate students from various schools within the university underwent specialised mental health training to serve as ambassadors, aiming to diminish the stigma surrounding mental illness within the academic community.

Results: The app included a chat function for participants to connect with other content users to increase social interaction. Resources included a playlist of relaxing music, including those for medication and sleep. Best-practice tips for exercise, sleep, and social connection were provided in the app, including culturally appropriate resources and tips to reduce stigma. Links to the campus accommodation website and the counselling centre were offered, along with a 24/7 campus hotline for those suffering from mental health issues. A mood diary allowed for daily tracking of a participant's mood, and standardised clinical tests for bipolar disorder, depression, anxiety, and eating disorders were placed to help screen for underlying illnesses. App users also could monitor their sleep and medication adherence. The app also connected users to the campus's social events calendar so that they could remain engaged in the community to foster a sense of belonging. The app was rolled out during a Mental Health Forum month consisting of a health fair, a mental health panel discussion, a motivational speaker, and a healthcare professional. Student ambassadors from the four schools help distribute the app information and encouraged other students to sign up.

Conclusion: The wellness application implemented within the HBCU context holds promise for addressing the mental health needs of students, with the potential to mitigate barriers to care and improve overall well-being within the academic community.

Designing for complexity: The use of co-adaptation for medication management across transitions of care

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Introduction: Medication management across transitions of care is complex, involving multiple settings and stakeholders. Consequently, people recently discharged from hospitals may receive variation in care and may encounter preventable drug-related problems, occasioning morbidity or even mortality. To design a medication management pathway for a complex and fragmented system, adaptation to each local context is required. Involving local stakeholders was hypothesised to improve the adaptation process and encourage local ownership.

Objective: The aim of this study was to develop a medication management pathway for timely medication review and post-hospital discharge in the Australian setting, adapted to local contexts.

Method: A literature-based and theoretically informed medication management pathway was developed as part of the ongoing ASPIRE stepped-wedge clinical trial (ACTRN12623000121662). A co-adaptation process was applied across four trial sites spanning urban, regional, and rural settings with differing health regulations and practices. Local researchers identified key stakeholders involved in medication management at each site who were invited to attend two face-to-face workshops, at which they were requested to: 1. Identify local stakeholders and express views towards the proposed pathway; 2. Ideate how the proposed medication management pathway may be adapted to the local context, and 3. Provide feedback on proposed implementation activities. Participants were asked to work in pairs, document, and feedback to the larger group to facilitate discussion. The research team conducted a document content analysis to evaluate participant contributions.

Results: To date, five workshops have been conducted across three of four sites between June 2023 and March 2024. Participants included consumers, policymakers, hospital pharmacists, general practitioners, hospital physicians, credentialed medication review pharmacists, discharge planners and practice administrators. On preliminary analysis, the key feedback from participants focussed on local

implementation barriers during the first workshop at each site. However, in the second workshop, participants were able to review and refine a local medication management pathway, thereby demonstrating the value of providing multiple opportunities for participants to contribute their views. The main process in the medication management pathway, which required contextualisation, was how secure transmission of clinical information was to be performed both across the care interface between acute and primary care, as well as between health care providers in the community.

Conclusion: Co-adaptation workshops were demonstrated to be feasible and acceptable in tailoring a medication management pathway to local contexts. These co-adapted local medication management pathways are currently being evaluated as part of the ongoing ASPIRE clinical trial.

Glocal imprints: Women pharmacists in a developing country

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Introduction: The historical narrative of Ghana has long been dominated by accounts of its political, social, and economic evolution, often overshadowing the significant but overlooked contributions of women. Despite their pivotal roles in various spheres, women's voices and achievements remain marginalised within Ghana's historical discourse.

Objective: This abstract aims to explore and highlight the neglected history of women pharmacists in Ghana, shedding light on their local and global impact.

Method: Utilising a historical approach, this study examines primary sources such as biographies, publications, and archival records to reconstruct the narrative of women pharmacists in Ghana from the late nineteenth century to the present day. By critically analysing existing literature and archival materials, the authors aim to unveil the experiences, challenges, and achievements of Ghanaian women pharmacists within the broader context of global pharmacy history.

Results: This research reveals a stark disparity in the representation of women pharmacists in historical accounts, with male-centric narratives dominating scholarly discourse. Despite their significant contributions to pharmacy practice, education, and healthcare, Ghanaian women pharmacists have been largely overlooked in historical records. Through this investigation, the authors identify pioneering figures such as Rosina Konuah, Elsie Sowah, Eniton Ruth Gavu, Jane R. Onny, Delese Mimi Darko, Rita Akosua Dickson, Martha Ghansa Lutterodt, Joyce Addo-Atuah, Czarina Ribeiro among others who played instrumental roles in shaping the pharmacy landscape in Ghana.

Conclusion: The findings of this study underscore the urgent need to rectify the historical neglect of women pharmacists in Ghana. By amplifying their voices and experiences, the authors not only enrich the historical narrative but also recognise the invaluable contributions of women to pharmacy practice and healthcare in Ghana. This research contributes to the broader discourse on gender equality in pharmacy and highlights the importance of acknowledging and celebrating the glocal imprint of women pharmacists in developing countries like Ghana. Moving forward, it is essential to continue documenting and commemorating the achievements of women pharmacists to ensure their rightful place in history and inspire future generations of pharmacy professionals.

Assessing the impact of a pharmacy administration and leadership short course targeting new hospital pharmacy leaders

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Introduction: In today's dynamic healthcare landscape, pharmacy administrators and leaders play a crucial role in ensuring quality patient care and organisational success. However, many pharmacists promoted to these positions lack formal training in administration and leadership, resulting in gaps in knowledge, skills, and confidence. While some seek to enhance their skills through independent learning or certificate programmes, these avenues may fall short in providing the comprehensive pharmacy leadership training desired. Additionally, pursuing a master's degree may be impractical due to time and financial constraints. Recognising this need, the University of North Carolina Eshelman School of Pharmacy, through the PharmAlliance partnership, developed a Pharmacy Administration and Leadership (PAL) Short Course Training Programme for pharmacy leaders at Monash Health.

Objective: This study aims to assess the viability and impact of such a programme, focusing on changes in participants' confidence levels, skill acquisition, and perceived value. Understanding the effectiveness of these programmes is essential in meeting the evolving needs of pharmacy professionals in administrative and leadership roles.

Method: The 12-module PAL Short Course Training Programme was launched in November 2023 for 23 newly

promoted Monash Health hospital pharmacy leaders. The modules took place through two in-person weekend workshops conducted at the start and end of the program, while the remaining sessions were conducted synchronously via a live video conferencing platform over a six-month period. Throughout the programme, participants were obligated to attend classes, engage in discussions, and fulfil assignments related to PAL topics. A pre- and post-course survey was utilised, covering demographics, perceived confidence ratings in pharmacy administration and leadership skills, past business and management education, perceived interest in PAL topics, and perceived confidence ratings for job performance. Descriptive statistics and paired t-tests were conducted to identify trends and changes in participants' responses before and after the course.

Results: Students showcased proficiency in various cognitive levels of Bloom's taxonomy as they engaged with the PAL curriculum, notably applying, evaluating, and creating. Participants had an average work experience of 14.7 years (SD = 8.4) and average tenure of 13.1 years (SD = 7.7) at their current institution. Participants reported an average of 5.0 years (SD = 6.8) in pharmacy management/administration roles, indicating the recency of their transition into administrative or leadership positions. Almost half of the participants (n = 11; 47.8%) had prior administrative or management training, demonstrating a desire for professional development. Similarly, nearly half (n = 11; 47.8%) actively pursued additional training before the programme's development, emphasising their commitment to skill development.

Conclusion: The experience of lecturing in this short course and various faculty interactions with the students underscore the positive impact of the PAL Short Course Training Programme on participants' perceived value by having targeted content toward their current professional needs. Through addressing the professional development needs of pharmacy administrators and leaders, programmes like this one contribute to building a competent and innovative pharmacy workforce capable of driving positive change in healthcare delivery. Continued investment in similar training initiatives is essential to nurture leadership talent and enhance patient care outcomes, ultimately advancing the pharmacy profession as a whole.

Changing prescribing behaviours through antimicrobial stewardship support in Africa and Asia – A mixed methods' programme evaluation

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Introduction: The Surveillance and Prescribing Support for Antimicrobial Stewardship Resource Capacity Building (SPARC) programme aims to improve antimicrobial stewardship (AMS), surveillance and prescribing across 22 low- and middle-income countries (LMICs) in Africa and Asia (12 and 10 countries, respectively). Funded by the Fleming Fund and managed by the Commonwealth Pharmacists Association, phase 1 of the programme (SPARC1) was launched in January 2022, focusing on building capacity and resilience across the health workforce through 1) The development and launch of a mobile application (Prescribing Companion app) and website providing national antimicrobial guidelines to support prudent antimicrobial prescribing in human and animal health; 2) Quality data collection on antimicrobial use (through point of prevalence surveys) supported by behaviour change training to create a culture of continuous quality improvement in practice. Since its inception, and through the leadership of empowered in-country consultants, app and site champions, and data collectors, SPARC has reached over 25 hospital sites, 10,700 in-patient beds, and 10,000 healthcare staff, with over 12 million patient population served.

Objective: This study aimed to evaluate the implementation of SPARC1, including strengths and weaknesses as well as recommendations for continuous quality improvement.

Method: A three-phase approach was used. 1) Development of an evaluation framework; 2) Data collection and scoring following a mixed methods approach to gather feedback from SPARC1 participants; online surveys were developed and disseminated to participants (n = 211), of which 30 were randomly invited to a virtual semi-structured interview. 3) Performance measuring, using a scoring system, to assess the extent to which SPARC1 had accomplished its intended outcomes and impact.

Results: A total of 97 surveys (46% response rate) and 18 interviews (60% participation rate) were completed. The majority of participants (82%) rated the programme's overall performance as 'very good' with respect to achieving its intended outcomes and impact. The success of SPARC1 was attributed to a well-managed programme with access to high-quality resources, effective training initiatives, active engagement and contribution of participating countries, alignment with national AMS action plans, strong stakeholder collaboration and utilisation of high-quality data. These elements have contributed to increased awareness and

improved practice outcomes in AMS. SPARC1 challenges included a slow national guideline approval process and change in prescribing behaviours, language and translation barriers, as well as time and resource limitations.

Conclusion: SPARC1 demonstrated strong relevance, effectiveness, and efficiency in increasing awareness and improving AMS, surveillance and prescribing practices in participating countries. Building on the success and lessons learnt from SPARC1, the next phases will continue utilising the content, training materials, tools and resources developed to support and promote ongoing behaviour change activities. The second phase of the programme (SPARC2), currently under development, aims to deliver a programme that furthers AMS initiatives through the continuous development and delivery of sustainable resources and health workforce capacity.

Factors Influencing provision of COVID-19 diagnostic testing services in community pharmacies in a Southeastern State, USA

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Introduction: Community pharmacies have become vital in providing diagnostic testing services for COVID-19, yet the determinants driving their engagement in this capacity remain insufficiently understood. This study investigated the factors influencing the provision of COVID-19 testing services in community pharmacies.

Method: Of all 1,172 Alabama pharmacies, 240 key informants completed a self-administered survey in February–April 2023 (response rate = 20.5%). Independent variables were individual and pharmacy characteristics and Pharmacist Perceived COVID-19 Diagnostic Testing Barriers (PDT-B) measure, and the dependent variable was whether they offered a COVID-19 diagnostic testing service (Yes/No). Exploratory Factor Analysis (EFA) was conducted on the PDT-B measure, utilising a Maximum Likelihood extraction method and excluding items with loadings < 0.300. Bivariate and multivariable logistic regression analyses were completed to identify influencing factors at $p \leq 0.05$.

Results: The PDT-B yielded three components: Fear of COVID-19 Exposure (e.g., personal exposure, exposure to pharmacy), Organisational Logistics (e.g., pharmacy space/testing location, increased workload, being trained, not having PPE), and Administration Logistics (e.g., testing regulations/requirements, procedures, and reimbursement), each with adequate internal consistency ($\alpha > 0.650$). Bivariate analyses revealed significant associations between COVID-19 diagnostic testing provider status and characteristic factors such as race ($p \leq 0.05$), pharmacy type/setting ($p \leq 0.001$), and prescription dispensation volume ($p \leq 0.001$), Organisational Logistics ($p \leq 0.01$), and Administration Logistics ($p \leq 0.001$). In the multivariable logistic regression model, statistically significant variables elucidated that chain pharmacies ($p < 0.001$) and those with lower Organisational Logistics barriers ($p \leq 0.05$) increased the likelihood of offering testing. Next, the authors stratified pharmacies into chain and non-chain (independently owned and outpatient hospital) pharmacies to identify factors influencing testing provision within each pharmacy type. Bivariate analyses on chain pharmacies revealed significant associations between COVID-19 diagnostic testing provision and pharmacy prescription dispensation volume ($p \leq 0.01$), as well as the Organisational Logistics component ($p \leq 0.05$). Subsequently, the multivariable logistic regression model identified that those with lower Organisational Logistics barriers ($p \leq 0.05$) were associated with an increased likelihood of offering COVID-19 testing services for chain pharmacies. For non-chain pharmacies, bivariate analyses revealed associations between COVID-19 testing service provision and all three components of the PDT-B: Fear of Exposure ($p \leq 0.05$), Organisational Logistics ($p \leq 0.001$), and Administration Logistics ($p \leq 0.001$). Applying the significant PDT-B associations to a multivariable logistic regression model on non-chain pharmacies, lower Administration Logistics barriers ($p = 0.005$) were associated with an increased likelihood of providing COVID-19 testing.

Conclusion: These findings underscore significant differences between chain and non-chain pharmacies regarding the factors influencing their decisions to provide COVID-19 diagnostic testing services. Lower levels of Organisational Logistics barriers were associated with an increased likelihood of COVID-19 testing provision in chain pharmacies, while lower Administration Logistics barriers were linked to heightened testing likelihood in non-chain pharmacies. These distinctions emphasise the need for tailored interventions to address specific barriers and optimise testing accessibility across diverse pharmacy settings.

Professional standards to underpin pharmacy services provided to people in their homes

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Introduction: The healthcare landscape is shifting towards a growing focus on enabling people to receive treatment and manage their health conditions within the comfort of their homes where possible, freeing capacity in overstretched hospitals. These models present exciting possibilities for pharmacy-led services and the pharmacy profession. Ensuring safe and effective service delivery requires clear professional guidance and standards.

Objective: The Royal Pharmaceutical Society's (RPS) Professional Standards have a vital role in underpinning the delivery of pharmacy services to people in their homes. It is important that services are provided in a consistent and appropriate manner and tools to ensure this is possible are readily available.

Method: RPS developed these standards through a collaborative process, drawing upon the insights and expertise of:

- Colleagues from regulatory and government bodies
- A task and finish group of multi-disciplinary colleagues working within or overseeing "hospital at home", "virtual ward" and "clinical homecare services"
- Literature review and evidence-base
- Open consultation processes to inform iterative improvements.

Results: To ensure services are provided at a consistent and appropriate standard two sets of professional standards were created or developed to meet the changing landscape of healthcare and the input of pharmacy teams.

The two key initiatives are:

1. This work to develop standards for "hospital at home" or "virtual wards" - Interim Professional Standards for Hospital at Home, including Virtual Ward, Pharmacy Services (2023).
2. This work refreshing the Homecare Standards for Pharmacy Services – RPS Professional Standards for Homecare Services (2024)

The key facets of the standards include:

- Putting people first: Emphasising the importance of person-centered care that caters to individual needs and preferences.
- Collaborative care: Fostering effective collaboration and communication among healthcare professionals involved in the transition process.
- Medicine and pharmacy services governance: Defining clear frameworks for medication safety, supply, and adherence within the home setting.
- Leadership and workforce development: Highlighting the importance of skilled leadership and equipping pharmacy teams with the necessary knowledge and expertise to thrive in virtual wards and hospital at home models.

Conclusion: By publishing these standards, the RPS seeks to ensure the involvement of pharmacists to lead and meaningfully improve "hospital at home" and "clinical homecare" services.

These standards serve as a valuable resource for healthcare professionals, contributing to:

- Improved patient outcomes through enhanced medication management and personalised care.
- Streamlined care delivery through efficient processes and collaborative teamwork.
- Enhanced patient experience by ensuring better transition and care continuity within the comfort of home.

Future Work:

As "hospital at home" model and "clinical homecare" models continue to evolve, the RPS remains committed to underpinning the role of pharmacy in future models of home-based care, this may involve:

- Developing additional resources to support implementation
- Advocating to ensure the involvement of pharmacists within broader "hospital at home" service models and healthcare policy frameworks.

Impact Of SGLT2 Inhibitors on CKD progression in diabetic patients In Qatar: A retrospective cohort study

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Introduction: The risk of end-stage renal disease is based on the estimated glomerular filtration rate (eGFR) reduction. Even though multiple large-scale clinical trials have demonstrated the preventive benefits of sodium-glucose cotransporter two inhibitors (SGLT2i) on the decrease in eGFR, it is found overlapping and conflicting results of the use of SGLT2 inhibitors for chronic kidney disease (CKD) at stage G3b or less.

Objective: This study aimed to assess the impact of the SGLT2Is on CKD Progression in Diabetic Patients with eGFR less than 45 mL/minute/1.73m2.

Method: A retrospective cohort study included patients with Type-2 diabetes receiving SGLT2i treatment followed up from November 2015 to January 2022. This study used the electronic health records, CERNER and clinical information system from Hamad Medical Corporation, Qatar. Available serum creatinine levels were collected before the first SGLT2I dispense day and at least one result after three months of use. The authors categorise this sample according to the baseline eGFR into three groups. The authors performed sub-group analyses (gender, age, HbA1c level, SGLT2i medication) to determine if they potentially affect studied outcomes. Chi-square and ANOVA tests were performed in the analysis (*alpha = 0.05*).

Results: The authors analysed a total of 1402 participants with Type-2 diabetes mellitus who were on SGLT2is. In short-term use, SGLT2i increases the eGFR drop for patients with eGFR of 15-45 mL/min/1.73 m2 compared to other included groups. However, advanced CKD patients (eGFR 15–45 mL/min/1.73 m2) with SGLT2 on long-term use did not observe a significant difference between groups.

Conclusion: This real-world study demonstrates the benefits of SGLT2is on CKD progression. SGLT2 inhibitors may be recognised as a component of the therapeutic plan for stage 4 CKD patients.

Sport pharmacists' role in ensuring proper treatment and doping prevention at international sporting events: Lessons from 2018 Pyeongchang Olympic & Paralympic games and 2024 Gangwon Youth Olympic Games

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Introduction: South Korea's recent hosting of the PyeongChang Olympic and Paralympic Games in 2018 and the Gangwon Youth Olympic Games in 2024 marked significant milestones. Alongside the athletes, pharmacy teams participated in these events, highlighting the emergence of sports pharmacy as a new vital aspect of pharmacy practice. It evaluated the role of pharmacists and the scope of pharmacy services provided during both Games.

Method: The Pharmacy Guide for the Gangwon Youth Olympic Games included age-specific medication precautions. During the PyeongChang Games, 5,313 prescriptions were dispensed, while 995 were dispensed during the Gangwon Youth Games. Analgesics, including acetaminophen and non-steroidal anti-inflammatory medicines, were the most prescribed medications among athletes. Notably, prohibited substances requiring therapeutic use exemptions were not prescribed during the Gangwon Youth Olympic Games. The daily prescription patterns showed similar patterns for both games. Still, the timing of prescription numbers increased a week earlier from the opening ceremony at the PyeongChang Games while it started near the opening date at the Gangwon Youth Games. Pharmacy interventions numbered more than 200 during the Games.

Results: Pharmacists played pivotal roles in delivering safe and effective medication use at the PyeongChang Olympic and Paralympic Games and the Gangwon Youth Olympic Games, contributing to protecting athletes' health and doping prevention efforts. Providing age-specific drug information for youth athletes is essential for medication safety. Future pharmacy management at sporting events should consider event capacity, weather-related illness, infection prevalence, and injury profiles to equip pharmacies adequately and mitigate potential risks.

Conclusion: This real-world study demonstrates the benefits of SGLT2is on CKD progression. SGLT2 inhibitors may be recognised as a component of the therapeutic plan for stage 4 CKD patients.

Prevalence, pattern of use, and predictors of complementary and alternative medicine: A nationally representative community-based survey in Ghana

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Introduction: Despite the widespread use of Complementary and Alternative Medicine (CAM) to address both communicable and non-communicable diseases in Ghana, published studies in Ghana usually focus primarily on clinical populations. Knowledge about the national-level prevalence, pattern of use and factors associated with CAM utilisation in the general population will contribute to the development of evidence-based- decisions to ensure the effective and safe use of CAM in the general population. This study investigates the prevalence, pattern of use, and predictors of CAM in Ghana.

Method: This was a nationally representative analytic cross-sectional community-based study in six regions, two from each of the three ecological (southern, middle and northern) zones of Ghana. Data were collected from household members above 18 years old through face-to-face interviews. The outcomes were lifetime and 12-month prevalence of CAM. Independent variables included sociodemographic factors, the presence of comorbidities, and behavioural, household, and obstetric factors. Descriptive, bivariate, univariable, and multivariable logistic regression analyses were performed to identify the predictors of CAM use.

Results: A total of 3064 participants were interviewed, with females forming 51.2%, and a median age of 31(IQR = 24-42) years. The lifetime prevalence of CAM utilisation was 82.1% (80.7 - 83.5%), ranging from 97% in the Upper East Region to 55.1% in the Western North region of Ghana ($p < 0.001$). The 12-month prevalence of CAM utilisation was 59.8% (58.1 - 61.6), ranging from 44.9% in the Western North region to 89.8% in the Upper East region. A slightly higher 12-month prevalence of 61.3% was observed in females compared to males (58.3%). The top five CAMs used in Ghana include herbal medicine (46.2%), vitamin supplements (36.3%), mineral supplements (30.3%), prayer (17.2%), and massage (8.9%). Among the 2288 CAM users, 24.3% (n = 557) had been using CAM for at least ten years. Having an existing comorbidity (AOR=1.59, CI= 1.16-2.18, $P = 0.004$), not being pregnant, (AOR=2.95, CI=1.49-5.88, $P = 0.002$) predicted CAM usage. Furthermore, participants with primary (AOR = 2.27, CI = 1.27- 4.04, $P = 0.006$), Junior High School (AOR = 1.81, CI = 1.13 - 2.90, $P = 0.013$), Senior High school (AOR = 2.60, CI = 1.61 - 4.20, $P < 0.001$), and Tertiary education (AOR = 3.36, CI = 1.98- 5.72, $P < 0.001$) experienced higher odds of ever -using CAM compared to those without any education. Households with four to six members (AOR = 1.53, CI = 1.15 - 2.02, $P = 0.003$), seven to nine members (AOR = 1.69, CI = 1.20 - 2.40, $P = 0.003$), and ten plus members (AOR = 2.84, CI = 1.77 - 4.57, $P < 0.001$) had higher odds of CAM usage. Compared to Christians, Muslims (AOR = 1.50, CI = 1.08 - 2.08, $P < 0.015$) and traditionalists (AOR = 2.73, CI=1.36- 5.48, $P < 0.005$) had higher odds of CAM use. Compared to the Ashanti region, participants resident in the Central (AOR = 20.36, CI = 11.91-34.79, $P < 0.001$) and Upper East (AOR = 9.14, CI = 3.05- 27.39, $P < 0.001$) had higher odds of CAM use.

Conclusion: CAM is widely used in the Ghanaian population with significant regional variation, education, pregnancy status, comorbidity, household size and religion determine the extent of CAM utilisation in the general population. These results highlight the need to ensure the effectiveness of CAM, and its safety in the general population.

Exploring the impact of entrepreneurial orientation on proposition and adoption of cognitive pharmacy services in French pharmacies

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Background: Over the past decade, French community pharmacies have diversified their offerings to include various pharmaceutical services such as cognitive pharmaceutical services (CPS), prescriptions for minor ailments, rapid diagnostic tests, and vaccination (both prescription and administration). Despite this expansion, CPS has encountered challenges in gaining traction in practice. Research by Doucette and Jumbuligam (1999) demonstrates that pharmacies characterised by high levels of Entrepreneurial Orientation (EO) are more inclined towards providing innovative pharmaceutical services. EO encompasses the processes, practices, and decision-making frameworks that facilitate market entry and reflect the managerial perspective on innovation.

Does EO positively impact the proposal and frequency of CPS provision?

Method: This survey, based on the EO scale developed by Doucette & Jambulingam (1999) (with a maximum score of 98), was translated by a bilingual and binational individual (FR/UK). It also includes a description of the services offered and discontinued within the pharmacy. The survey was electronically distributed to a national mailing list of registered pharmacists. Binary logistic regression and linear regression analyses, conducted using R v 4.2.1 (stats package v 4.2.1), aimed to identify contributing factors to (i) the proposal of CPS and (ii) the frequency of CPS provision.

Results: A total of 199 pharmacist owners, including 56.8% (n = 113) women, participated in the survey, representing all 13 metropolitan French regions. The majority practice in neighbourhood pharmacies (n = 72; 36.2%) and rural areas (n = 70; 35.2%), with an average staff size of 8.4 full-time equivalents (σ = 5.1). The average EO score is 66 out of 98 (σ = 13). Among respondents, 62.8% (n = 125) indicated proposing at least one CPS, while 25.1% (n = 50) had ceased proposing at least one. Pregnancy counselling is the most frequently proposed CPS (n = 90; 45.2%), whereas Asthma counselling was the least proposed (n = 49; 24.6%). Oral Anticoagulant counselling is the most discontinued CPS discontinuation rate (n = 80; 40.2%). The EO score significantly predicts the proposal of CPS (OR = 1.06; $p < 0.001$). However, factors such as team size, owner's age, and pharmacy type were not predictive. Within the EO scale, only the Proactivity subscale significantly and positively influenced

CPS proposal (OR = 1.19; $p < 0.05$). Conversely, the EO score did not significantly predict the frequency of CPS provision.

Conclusion: This survey confirms that the entrepreneurial mindset of pharmacist-owners influences the CPS proposal, yet the proposal does not necessarily translate to implementation. This study contributes to the literature by highlighting factors beyond financing, time requirements, or eligibility criteria associated with CPS implementation. Pharmacist owners who propose CPS demonstrate greater proactivity, anticipating market conditions and seeking new opportunities. They exhibit flexibility in responding to demand. This is undoubtedly the area to investigate in order to help implement CPS in the pharmacy.

Investigating postpartum depression in first-time mothers using PRAMS data: Race, ethnicity, age, and geographic analysis

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Background: Postpartum depression (PPD) is a significant public health concern that affects a substantial number of new mothers. PPD is more than mere psychological distress; it is emerging as a silent epidemic profoundly impacting mothers and families after childbirth and echoing through generations. While strides in understanding maternal mental health during the prenatal and postnatal period have been made, a knowledge gap exists in understanding underlying demographic factors that play a role in the experience of PPD particularly for first-time mothers. Additionally, the need for nationally representative samples versus region-specific studies remains an open question, as regional variations and state-level policies play a crucial role in shaping maternal mental health disparities.

Objective: The objective of this study is to investigate self-reported postpartum depression rates using a geographically representative database that includes information on race/ethnicity, age, and geographic location among first-time mothers across U.S. states, the District of Columbia, and Puerto Rico to examine the association between these demographic variables and PPD.

Methods: This cross-sectional study included survey data from the 2016-2021 Pregnancy Risk Assessment Monitoring System (PRAMS) for 43 reporting entities (41 U.S. states, the District of Columbia, and Puerto Rico). Study records were included if 1) the birth was documented as a live first birth, and 2) there was no evidence of the mother reporting depression or anxiety prior to or during the pregnancy. Two cohorts were defined – mothers identified with PPD using PRAMS survey questions and those without documented PPD. PRAMS data reports mothers aged ≤ 17 as 17, and ≥ 45 as 45. Chi-square and logistic regression were carried out using RStudio 2023 (R Foundation for Statistical Computing). P-values <0.05 were considered a priori as statistically significant. Geographical differences were plotted using RStudio to create a choropleth map of reported PPD rates.

Results: 62,599 mothers met inclusion criteria; 6,118 (9.77%) with PPD and 56,481 (90.23%) without PPD. Chi-square analyses revealed significant disparities between cohorts on race/ethnicity and age ($p < 0.001$), with mothers aged ≤25 of non-White racial groups having higher prevalence rates (Non-Hispanic Asian=17.7%, Non-Hispanic Hawaiian/other Pacific islander=14.7%, Non-Hispanic Black=14.3%, Non-Hispanic Alaska Native=14%, Non-Hispanic American Indian=13.1%, Non-Hispanic White=6.9%, Non-Hispanic other/multiple racial groups=10%, and Hispanic in any racial group = 9.1%). A logistic regression model including age and race/ethnicity found the interaction between the two significant ($p < 0.05$). Non-Hispanic Asian mothers aged 26-30 and 36-40 were each 2.3 times more likely to report PPD following their first live birth. Geographic mapping of reported PPD prevalence rate by state identified three states with prevalence rates >15% (Mississippi=17.81%; Arkansas=15.38%; Alabama=15.23%) and one state with rates <5% (Arizona=4.93%).

Conclusion: These findings suggest that age and race/ethnicity are factors in the reporting of PPD, with non-White mothers in younger age groups reporting the highest rates following their first live birth. There are also large variations in prevalence rates by state. Healthcare policies and resources targeting PPD should consider age, race, ethnicity, and U.S. geographic location in developing interventions and support services for first-time mothers.

Analysing factors influencing drug prices in public pooled procurement: A focus on market competition

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Background: Despite ongoing research efforts to explore the potential advantages of pooled procurement, there is a gap in the existing body of knowledge, particularly in understanding the determinants of drug price changes in long-term pooled procurement strategies, especially focusing on market competition.

Objective: Employing a price index as a key metric in assessing the impact of changes in drug prices over time, this study aims to analyse trends and factors that influence the awarded prices, particularly market competition in the pooled drugs procurement system in the Malaysian public healthcare sector.

Methods: This study was conducted as a retrospective review of secondary data on public pooled drug procurement from the Ministry of Health Malaysia. The analysis focused on eight therapeutic subgroups of drugs' tendering processes that show significant expenditure and consumption patterns from 2010 to 2021. Changes in pharmaceutical pricing were measured using a price index, and potential influencing factors were examined through multiple linear regression analysis. The variables studied for the Price Index included Quantity Index, product age, bidding period, therapeutic subgroups, type of procurement, type of competing products, number of competing products, and dosage form. The price index serves as a baseline, with a value of 100 indicating no change in price, values below 100 suggesting a decrease, and values above 100 indicating an increase.

Results: Analysis of 88 drugs across 335 tenders over ten years yielded a median drug price index of 89.28 (ranging from 1.91 to 123.81). Trends indicated a consistent decline in the median drug price index over the bidding period. Significant factors influencing the drug price index included quantity index, product age, number of biddings, therapeutic subgroups, type of competing product (e.g., innovator versus generic or biosimilar), and the number of competing products ($p < 0.05$). Notably, a higher reduction in the median drug price index was observed when at least four products competed in the tender, particularly during the sixth to twelfth bids.

Conclusion: This finding underscores the importance of understanding market dynamics and their impact on pricing trends in the healthcare sector. While this analysis provides valuable insights, it's essential to interpret the results with caution, as drug prices can be influenced by a multitude of direct and indirect factors beyond the scope of this study. Future studies may want to explore the effectiveness of different procurement models (e.g., pooled versus segmented) in fostering competition and driving down drug prices while ensuring equitable access to essential drugs.

Implications from the resolve study for pharmacy

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Introduction: One of the main treatment options for severe mental illnesses (SMIs), such as schizophrenia, are second-generation antipsychotics. It is well known that these medications are associated with significant weight gain, often leading to the development of or worsening of physical illnesses, such as cardiovascular disease and diabetes. Many pharmacological and non-pharmacological interventions have been tried to limit weight gain, but there is not a clear understanding of what works, by whom and in which circumstances.

The NIHR-funded RESOLVE study (Reference: HSDR131871) is currently investigating non-pharmacological interventions for obesity management of antipsychotic-induced weight gain in service users (SU) with SMI living in the community. Pharmacy can play a key role in the management of harmful physical side effects associated with antipsychotics in SMI in the community. Here, the authors report implications for pharmacy from RESOLVE.

Purpose: A key aim of RESOLVE was to understand the role of different practitioners in evidence-based obesity management for this complex population.

Method: RESOLVE has used a realist methodology that combines secondary data from the literature with stakeholder interviews. Using realist approaches, a programme theory of comprehensive obesity management for SUs with SMI was developed, accompanied by a series of causal explanations or testable hypotheses of what works for this population, under what circumstances, including mode of delivery by whom. Secondary data from the literature was validated with interviews that included 11 Service Users, 29 Healthcare Professionals and 6 Family Carers.

Results: A key finding from the literature was the limited role, in general, that community-based pharmacists currently play in obesity management for SUs with SMI. The key multi-pronged interventions cited in the literature are nutrition counselling, exercise and behaviour therapy. Although several literature sources described the importance of ongoing physical health tracking, monitoring and management, these roles were often ascribed to general practitioners and nurses. The practitioner group in the RESOLVE study identified the potential for the more active involvement of community-based pharmacy teams to lessen the burden on other practitioners and to develop more accessible, community-based, professional contacts for SUs

who need regular, ongoing physical health monitoring, physical health information updates and reinforcement.

Physical health support must be tailored to individual SUs' specific needs and challenges. Pharmacists are often in a position to forge therapeutic relationships with SUs, resulting in collaborative treatment planning that pharmacists can coordinate with other practitioners, including primary and secondary care services. Community pharmacy, in particular, can play a key signposting role.

Conclusion: This review highlights the potential role that pharmacy, especially community pharmacy, could play in obesity management for community-dwelling SUs with SMI. RESOLVE plans to produce guidance for practitioners, including pharmacists, on the most appropriate ways to limit and manage antipsychotic-induced weight gain in this population.

Systematic review of factors influencing antimicrobial prescribing decisions by physicians

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Introduction: Inappropriate and overuse of antimicrobials, in part due to inappropriate prescribing, is increasing antimicrobial resistance (AMR). Evidence has shown that prescribing in accordance with evidence-based guidelines reduces resistance. However, guideline adherence remains low. Understanding physicians' antimicrobial decision-making is essential for developing interventions to optimise prescribing.

Methods: A systematic review of qualitative studies was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify the factors that influence physicians' antimicrobial prescribing decisions. The search was limited to studies published from 2014 onwards to provide an update to a prior systematic review on this topic. Importantly, this review included studies on all infection types, and from all countries and settings. Factors influencing antimicrobial prescribing were extracted and categorised into physician-related, patient-related, medication- and condition-related, and external factors. These factors were compared across patient populations (adults, paediatrics, and geriatrics), infection types, countries (high-income countries [HICs] and low- and middle-income countries [LMICs]), and settings (primary care, hospital setting, and residential aged care facilities). The individual factors were mapped to different stages of the prescribing process to create a model of physicians' antimicrobial decision-making.

Results: Fifty-three studies met the inclusion criteria and were analysed in this review. Forty factors influencing antimicrobial prescribing decisions were identified, including novel factors not previously reported in systematic reviews. The most common factors influencing prescribing were time pressures, patient/carer demand for antimicrobials, diagnostic uncertainty, clinical experience, and the use of evidence-based guidelines. Factors which influenced antimicrobial prescribing considered the harm to the patient and the physician to outweigh the potential population harm of antimicrobial resistance due to overprescribing. Time pressures, patient demand for antimicrobials, and diagnostic uncertainty were all more common factors influencing prescribing in the community when compared with the hospital setting. Patient demand and diagnostic uncertainty were also more common in managing paediatric and geriatric patients compared with adult patients. The use of evidence-based guidelines and diagnostic testing to assist in making prescribing choices is limited in LMIC due to resource constraints. A model of physicians' antimicrobial prescribing process, starting from reviewing the patient to selecting an antimicrobial, was created, showing the factors that physicians consider at each stage of decision-making and how each step of the process is influenced by the physician themselves, the patient, the patient's condition, the antimicrobial, and organisational and external factors. This will be useful for mapping results to existing frameworks when creating future interventions to optimise prescribing.

Conclusion: The overarching theme from the studies in this review is that prescribers view the immediate harm to the patient and themselves by underprescribing antimicrobials to outweigh the future population harm of AMR by overprescribing antimicrobials. Future interventions to optimise prescribing must determine how to balance individual and population harms whilst considering the individual factors identified in this review that influence prescribing decisions.